SURDS & INDICES

घातांक और करणी

CLASS NOTES

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Square (वर्ग)

$1^2 = 1$

$2^2 = 4$

$3^2 = 9$

$4^2 = 16$

$5^2 = 25$

Square Root (वर्ग मूल)

$$\sqrt{25} = (25)^{\frac{1}{2}}$$

$$= (5^2)^{\frac{1}{2}}$$

$$= 5^{2 \times \frac{1}{2}}$$

$$= \boxed{5}$$

$$\sqrt{16} = \sqrt{(4)^2} = 4$$

Square

$1^2 = 1$

$2^2 = 4$

$3^2 = 9$

$4^2 = 16$

$5^2 = 25$

$6^2 = 36$

$7^2 = 49$

$8^2 = 64$

$9^2 = 81$

$10^2 = 100$

$11^2 = 121$

$12^2 = 144$

$13^2 = 169$

$14^2 = 196$

$15^2 = 225$

$16^2 = 256$

$17^2 = 289$

$18^2 = 324$

$19^2 = 361$

$20^2 = 400$

$21^2 = 441$

$22^2 = 484$

$23^2 = 529$

$24^2 = 576$

$25^2 = 625$

$26^2 = 676$

$27^2 = 729$

$28^2 = 784$

$29^2 = 841$

$30^2 = 900$

Unit Digit $(2,3,7,8)\ X$

$\cancel{0}, \cancel{1}, 2, 3, \cancel{4}, \cancel{5}, \cancel{6}, 7, 8, \cancel{9}$

Digital Sum

$(1, 4, 7, 9)\ \checkmark$

2-Digit

$(15)^2 = 225$

$(25)^2 = 625$

$(35)^2 = 1225$

$(85)^2 = 7225$

$(95)^2 = 9025$

$(125)^2 = 15625$

$(21)^2$

$$\frac{2^2}{4} \quad \frac{2 \times 1 \times 2}{4} \quad \frac{1^2}{1}$$

$(31)^2$

9   6   1

$(42)^2$

$$\frac{\overset{1}{16} \quad \overset{}{6} \quad 4}{17 \ 6 \ 4}$$

$(91)^2$

$$8\overset{1}{1} \quad 8 \quad 1$$

$= 82 \ 8 \ 1$

$(97)^2$

12 4
81 6 9

$= 9409$

$(86)^2$

9 3
64 6 6

7396

$(59)^2$

9 8
25 0 1

3481

1. If $x = \sqrt{64} + \sqrt{121} - \sqrt{169}$, then find the value of x^2.

यदि $x = \sqrt{64} + \sqrt{121} - \sqrt{169}$ है, तो x^2 का मान ज्ञात करें।

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(a) 16

(b) 25

(c) 36

(d) 49

$$x = 8 + 11 - 13 = 6$$

$$\therefore \quad x^2 = 6^2 = \underline{\underline{36}}$$

2. Find the value of

$$= 25 + \frac{25}{10} + \frac{25}{100} + \frac{25}{1000}$$

$$= 25 + 2.5 + 0.25 + 0.025$$

$$\sqrt{625} + \sqrt{\frac{625}{100}} + \sqrt{\frac{625}{10000}} + \sqrt{\frac{625}{1000000}}$$

$$\sqrt{625} + \sqrt{\frac{625}{100}} + \sqrt{\frac{625}{10000}} + \sqrt{\frac{625}{1000000}}$$ का मान ज्ञात कीजिए।

```
25.000
 2.5
 0.25
 0.025
27.775
```

(a) 27.025   (b) 27.775 ✓
(c) 27.075   (d) 27.75

$$\frac{37}{10} = 3.7 \qquad \frac{37}{100} = 0.37 \qquad \frac{37}{1000} = 0.037$$

(3.) Find the value of the given expression.

दिए गए व्यंजक का मान ज्ञात कीजिए।

$$\sqrt{8 + \sqrt{1681}}$$

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(a) 5

(b) 6

(c) 4

(d) 7

$$\sqrt{8 + 41}$$

$$= \sqrt{49}$$

$$= 7$$
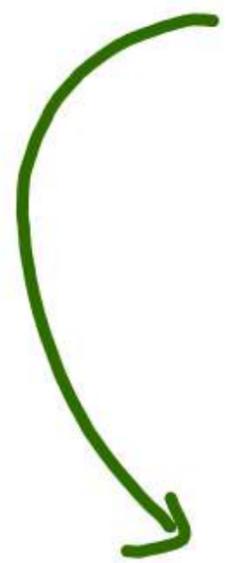
$$(41)^2 = 1681$$

4. Find the value of : $\sqrt{(9+\sqrt{(36+\sqrt{(144+\sqrt{625})})})}$

का मान ज्ञात कीजिए।

(a) 6

(b) 4

(c) 5

(d) 3

$$\sqrt{9+\sqrt{36+\sqrt{144+25}}}$$

$$=\sqrt{9+\sqrt{36+\sqrt{169}}}$$

$$=\sqrt{9+\sqrt{36+13}}=\sqrt{9+\sqrt{49}}$$

$$=\sqrt{9+7}=\sqrt{16}=4$$

4.   Find the value of : $\sqrt{(9 + \sqrt{(36 + \sqrt{(144 + \sqrt{625})})})}$

का मान ज्ञात कीजिए।

(a) 6

(b) 4

(c) 5

(d) 3

$$\sqrt{16 + 19.25 \times 16}$$

$$= \sqrt{16(1 + 19.25)}$$

$$= \sqrt{\cancel{16} \times \frac{\cancel{2025}}{\cancel{100}}} \quad \frac{81}{4}$$

$$= 2 \times 9 = \boxed{18}$$

$$ans = \frac{\cancel{4}}{\cancel{18}} \quad \frac{2}{9}$$

5. **Simplify (solve) the following.**

निम्नलिखित को सरल (हल) कीजिए।

④ $\left\{ \dfrac{\sqrt{10 + \sqrt{25 + \sqrt{108 + \sqrt{154 + \sqrt{225}}}}}}{\sqrt{16 + 19.25 \times 4^2}} \right.$

$+6 \quad +11 \quad +13 \quad 15$

⑱ $\left\{ \sqrt{16 + 19.25 \times 4^2} \right.$

(a) $\dfrac{7}{18}$

(b) $\dfrac{1}{9}$

(c) $\dfrac{2}{9}$

(d) $\dfrac{5}{18}$

$$\sqrt{16 + 19.25 \times 16}$$

$$= \sqrt{16(1 + 19.25)}$$

$$= \sqrt{16 \times 20.25}$$

$$= 4 \times 4.5 = \boxed{18}$$

$$Ans = \frac{4}{18} \quad \frac{2}{9}$$

5. Simplify (solve) the following.

निम्नलिखित को सरल (हल) कीजिए।

④ $\left\{ \dfrac{\sqrt{10 + \sqrt{25 + \sqrt{108 + \sqrt{154 + \sqrt{225}}}}}}{} \right.$

⑱ $\left\{ \sqrt{16 + 19.25 \times 4^2} \right.$

+6 +11 +13 15

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(a) $\dfrac{7}{18}$

(b) $\dfrac{1}{9}$

(c) $\dfrac{2}{9}$

(d) $\dfrac{5}{18}$

$$\text{Q.} \quad \sqrt{620 + \sqrt{20 + \sqrt{8 + \sqrt{289}}}}$$

Ans $= \sqrt{620 + \sqrt{20 + \sqrt{8 + 14}}}$

$= \sqrt{620 + \sqrt{20 + 5}}$

$= \sqrt{620 + 5}$

$= \sqrt{625}$

$= 25$

Square Root

$$\sqrt{1225} = \quad \frac{3 \; 5}{1225} = (35)$$

$\downarrow$

9

$$\sqrt{4096} = \overline{40}\,\overline{96}$$

4 or 6

6

36   49

ans = 64 ✓

S-1 → pair ✓

S-2

$$\sqrt{2025} = \overline{20}\,\overline{25}$$

16,

$$\underline{4}\ \underline{5}\ \curvearrowright$$

$$\sqrt{1024}$$

$$\overline{10}\,\overline{24}$$

9 → 16

(3 2) or (3 8)
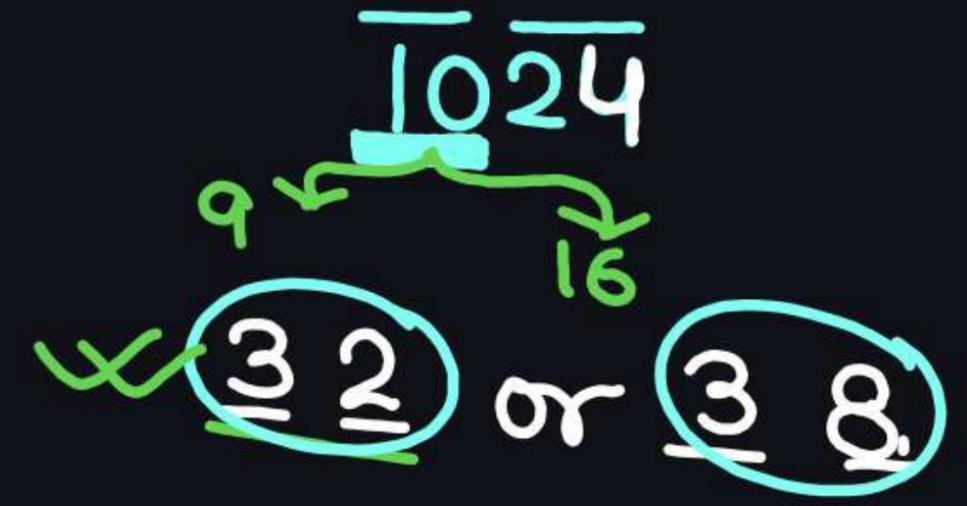
$$\sqrt{2209} = \overline{22}\overline{09}$$

16   25

4 3 or (4 7) ✓

$$\sqrt{2809} = \overline{28}\overline{09}$$

25   36

5 3 or 5 4

$\sqrt{4489} = \overline{44}\overline{89}$

$36 \swarrow \searrow 49$

$6\ 3\ or\ 6\ 7$

$(47)^2$

$$\begin{array}{ccc} & 5 & 4 \\ 1\ 6 & 6 & 9 \\ \hline 2\ 2\ 0 & 9 \end{array}$$

$\sqrt{2601} = \overline{26}\overline{01}$

$25 \searrow 36$

$5\ 1\ or\ 5\ 9$

6. $\sqrt{\sqrt{4489} - \sqrt{47^2 + 392}} = ?$

(a) 2   (b) 6

(c) 1   (d) 4

$\sqrt{67 - \sqrt{2209 + 392}}$

$= \sqrt{67 - \sqrt{2601}}$

$= \sqrt{67 - 51}$

$= \sqrt{16} = 4$

$$\sqrt{81} = (9)^{2 \times \frac{1}{2}} = 9$$

$$\sqrt[3]{729} = (9)^{3 \times \frac{1}{3}} = 9$$

7. Solve/हल करें

$$\sqrt{21 + \sqrt[3]{59 + \sqrt{16 + \sqrt[3]{722 + \sqrt{49}}}}} \ ?$$

(a) 4

(b) 5

(c) 6

(d) 7

$$\sqrt{21 + \sqrt[3]{59 + \sqrt{16 + \sqrt[3]{729}}}}$$

$$= \sqrt{21 + \sqrt[3]{59 + \sqrt{25}}}$$

$$= \sqrt{21 + \sqrt[3]{64}} = \sqrt{21 + 4} = 5$$

$$\sqrt[m]{\sqrt[n]{\sqrt[o]{\left(\left(A\right)^p\right)^q}}}$$

$$= \boxed{A^{\frac{p \times q}{m \times n \times o}}}$$

$$a^m \times a^n = a^{m+n}$$

$$2^3 \times 2^5 = 2^{3+5}$$

8. If $A = \sqrt[8]{\sqrt[3]{(81^2)^3}}$ and $B = \sqrt[6]{\sqrt[3]{(3^4)^3}} \times \sqrt[6]{\sqrt[6]{(3^2)^6}}$ then what will the value A + B?

यदि $A = \sqrt[8]{\sqrt[3]{(81^2)^3}}$ तथा $B = \sqrt[6]{\sqrt[3]{(3^4)^3}} \times \sqrt[6]{\sqrt[6]{(3^2)^6}}$ तो A + B का मान क्या है?

(a) 9

(b) 4

(c) 6

(d) 3

$$A = 81^{\frac{2 \times 3}{3 \times 8}4}$$

$$= 81^{\frac{1}{4}}$$

$$= (3^4)^{\frac{1}{4}}$$

$$= 3^1$$

$$B = 3^{\frac{4 \times 3}{3 \times 6}3} \times 3^{\frac{2 \times 6}{6 \times 6}3}$$

$$= 3^{\frac{2}{3}} \times 3^{\frac{1}{3}}$$

$$= 3^{\frac{2}{3} + \frac{1}{3}} = 3^1$$

$$= 3^1$$

⑥

$(343)^{\frac{2}{3 \times 3}} \times 216^{\frac{2}{3 \times 3}}$

$= (343)^{\frac{1}{3}} \times 216^{\frac{1}{3}}$

$= (7^3)^{\frac{1}{3}} \times (6^3)^{\frac{1}{3}}$

$= 7^{3 \times \frac{1}{3}} \times 6^{3 \times \frac{1}{3}}$

$= 7 \times 6$

$= 42$

9. Find the value of $\left(\sqrt[3]{\sqrt[3]{343}}\right)^3 \times \left(\sqrt[3]{\sqrt[3]{216}}\right)^3$

$\left(\sqrt[3]{\sqrt[3]{343}}\right)^3 \times \left(\sqrt[3]{\sqrt[3]{216}}\right)^3$ का मान ज्ञात कीजिए।

(a) 42^3

(b) 56

(c) 42

(d) $\sqrt[3]{42}$

9. Find the value of $\left(\sqrt[3]{\sqrt[3]{343}}\right)^3 \times \left(\sqrt[3]{\sqrt[3]{216}}\right)^3$

$\left(\sqrt[3]{7}\right)^3 \times \left(\sqrt[3]{6}\right)^3$ का मान ज्ञात कीजिए।

(a) 42^3

(b) 56

(c) 42

(d) $\sqrt[3]{42}$

$7 \times 6 = 42$

$*\quad (20)^2 \ = \ 400$

$*\quad (2)^2 \ = \ 4$

$*\quad (0.2)^2 \ = 0.04$

$*\quad (0.\underline{02})^2 \ = 0.0004$

$*\quad (0.002)^2 \ = 0.000004$

$*\ (0.16)^2 = 0.0256$

$\sqrt{0.04} \ = \ 0.2$

$\sqrt{0.0004} \ = 0.02$

$\sqrt{0.000004} \ = 0.002$

10. What is the value of $\left(\sqrt{(0.\underline{07})^2 + (0.\underline{24})^2}\right) \div 25$

का मान क्या है?

(a) 2.5

(b) 0.1

(c) 0.25

(d) 0.01

$$\frac{\begin{array}{r} 0.0049 \\ 0.0576 \end{array}}{0.0625}$$

$$ans = \frac{\sqrt{0.0049 + 0.0576}}{25} = \frac{\sqrt{0.0625}}{25}$$

$$= \frac{0.\cancel{25}^{\,1}}{\cancel{25}}$$

$$= 0.01$$

11. What is the value of $\sqrt[3]{0.02 + \sqrt{0.000049}}$

का मान क्या है?

(a) 3

(b) 0.003

(c) 0.03

(d) 0.3

$$\dfrac{\begin{array}{r} 0.02 \\ 0.007 \end{array}}{0.027}$$

$$\sqrt[3]{0.02 + 0.007}$$

$$= \sqrt[3]{0.027}$$

$$= \sqrt[3]{\dfrac{27}{1000}} = \dfrac{3}{10} = 0.3$$

$$\frac{0.02}{0.007}$$
$$\overline{0.027}$$

11. What is the value of $\sqrt[3]{0.02 + \sqrt{0.000049}}$

का मान क्या है?

(a) 3

(b) 0.003

(c) 0.03

(d) 0.3

$$\sqrt[3]{0.02 + 0.007}$$

$$= \sqrt[3]{0.027}$$

$$= 0.3$$

$* \ (11)^2 \ = 121$

$* \ (111)^2 \ = 12321 \ \checkmark$

$* \ (1111)^2 = 1234321$

$* \ (11111)^2 = 123454321$

$* \ \sqrt{121} = 11$

$* \ \sqrt{12321} = 111$

$* \ \sqrt{1234321} = 1111$

$* \ \sqrt{123454321} = 11111$

12. Which of the following statement(s) is/are TRUE?/निम्नलिखित में से कौन-सा/से कथन सत्य/हैहैं/?

I. $\sqrt{121} + \sqrt{12321} + \sqrt{1234321} = 1233$

II. $\sqrt{0.64} + \sqrt{64} + \sqrt{36} + \sqrt{0.36} > 15$

(a) Only I
(b) Only II
(c) Neither in or II
(d) Both I and II

$$I \to 11 + 111 + 1111$$
$$= 1233$$

$$0.8 + 8 + 6 + 0.6$$
$$= 1.4 + 14$$
$$= 15.4$$

$$\underline{100+}$$

* $(101)^2 = 10201$

* $(102)^2 = 10404$

* $(103)^2 = 10609$

* $(104)^2 = 10816$

* $(106)^2 = 11236$

$$\underline{100-}$$

* $(99)^2 = 9801$

* $(98)^2 = 9604$

* $(97)^2 = 9409$

* $(96)^2 = 9216$

* $(95)^2 = 9025$

13. $\sqrt{104.04} + \sqrt{1.0404} + \sqrt{0.010404}$ is equal to

$\sqrt{104.04} + \sqrt{1.0404} + \sqrt{0.010404}$ के बराबर है

(a) 0.306
(b) 0.0306
(c) 11.122
(d) 11.322

Ans = $10.2 + 1.02 + 0.102$

= 11.322

$\sqrt{10404} = (102)$

$\begin{array}{r} 10.2 \\ 1.02 \\ 0.102 \\ \hline 11.322 \end{array}$

14. If $\sqrt{5329} = 73$, then value of

$$\sqrt{5329} + \sqrt{53.29} + \sqrt{0.5329} + \sqrt{0.005329}$$
$$+\sqrt{0.00005329} \text{ is}$$

यदि $\sqrt{5329} = 73$, तो

$$\sqrt{5329} + \sqrt{53.29} + \sqrt{0.5329} + \sqrt{0.005329} \text{ का मान है}$$
$$+\sqrt{0.00005329}$$

(a) 81.1003

(b) 81.0113

(c) 81.1103

(d) 81.1013

$$73 + 7.3 + 0.73 + 0.073$$
$$+ 0.0073$$

Ans =

$$\begin{array}{r} 73 \\ 7.3 \\ 0.73 \\ 0.073 \\ 0.0073 \\ \hline 81.1103 \end{array}$$

$$\frac{\sqrt{16\times5} - \sqrt{16\times7}}{\sqrt{9\times5} - \sqrt{9\times7}}$$

$$= \frac{4\sqrt{5} - 4\sqrt{7}}{3\sqrt{5} - 3\sqrt{7}} = \frac{4(\sqrt{5} - \sqrt{7})}{3(\sqrt{5} - \sqrt{7})}$$

15. The value of $\dfrac{\sqrt{80} - \sqrt{112}}{\sqrt{45} - \sqrt{63}}$ is:

$\dfrac{\sqrt{80} - \sqrt{112}}{\sqrt{45} - \sqrt{63}}$ का मान है:

(a) $\dfrac{3}{4}$

(b) $1\dfrac{3}{4}$

(c) $1\dfrac{1}{3}$

(d) $1\dfrac{7}{9}$

$$\sqrt{\dfrac{\overset{8}{72}\times\overset{121}{363}\times\overset{25}{175}}{\underset{4}{32}\times\underset{21}{147}\times\underset{28}{252}}}$$

$$= \sqrt{\dfrac{121\times 25}{28\times 28}} = \dfrac{11\times 5}{28}$$

16. The value of $\dfrac{\sqrt{72}\times\sqrt{363}\times\sqrt{175}}{\sqrt{32}\times\sqrt{147}\times\sqrt{252}}$ is.

का मान ज्ञात करें।

(a) $\dfrac{55}{42}$

(b) $\dfrac{45}{56}$

(c) $\dfrac{45}{28}$

(d) $\dfrac{55}{28}$

$$\sqrt[3]{\frac{8}{100} \times \frac{8}{10} \times p} = \frac{8}{1000} \times \frac{8}{10} \times \sqrt[3]{q}$$

$$\Rightarrow \frac{\cancel{8} \times \cancel{8}}{\cancel{10}} \times \sqrt[3]{p} = \frac{8}{1000} \times \frac{\overset{2}{\cancel{8}}}{\cancel{10}} \times \sqrt[3]{q}$$

$$\Rightarrow \left(\frac{\sqrt[3]{p}}{\sqrt[3]{q}}\right)^3 = \left(\frac{16}{1000}\right)^3$$

$$\Rightarrow$$

$$\frac{p}{q} = \frac{16^3}{10^9} = \frac{(2^4)^3}{10^9} = \frac{2^{12}}{10^9} = \frac{(2^3)^4}{10^9} = 8^4 \times 10^{-9}$$

17. If $\sqrt[3]{0.08 \times 0.8 \times p} = 0.008 \times 0.8 \times \sqrt[3]{q}$ then find the value of $\dfrac{p}{q}$.

यदि $\sqrt[3]{0.08 \times 0.8 \times p} = 0.008 \times 0.8 \times \sqrt[3]{q}$, है, तो $\dfrac{p}{q}$ का मान ज्ञात कीजिए।

SSC CHSL MAINS 02/11/2023 (Shift- 01)

(a) $8^4 \times 10^{-8}$ (b) $8^3 \times 10^{-9}$

(c) $8^3 \times 10^{-8}$ (d) $8^4 \times 10^{-9}$

$$\sqrt[3]{\frac{8}{100} \times \frac{8}{10} \times p} = \frac{8}{1000} \times \frac{8}{10} \times \sqrt[3]{q}$$

$$\Rightarrow \frac{\cancel{8} \times \cancel{8}}{10} \times \sqrt[3]{p} = \frac{8}{1000} \times \frac{\cancel{8}^2}{\cancel{10}} \times \sqrt[3]{q}$$

$$\Rightarrow \left(\frac{\sqrt[3]{p}}{\sqrt[3]{q}}\right)^3 = \left(\frac{16}{1000}\right)^3$$

$$\Rightarrow$$

$$\frac{p}{q} = \frac{16^3}{10^9} = \frac{(2 \times 8)^3}{10^9} = \frac{2^3 \times 8^3}{10^9} = \frac{8^1 \times 8^3}{10^9} = 8^4 \times 10^{-9}$$

17. If $\sqrt[3]{0.08 \times 0.8 \times p} = 0.008 \times 0.8 \times \sqrt[3]{q}$ then find the value of $\frac{p}{q}$.

यदि $\sqrt[3]{0.08 \times 0.8 \times p} = 0.008 \times 0.8 \times \sqrt[3]{q}$, है, तो $\frac{p}{q}$ का मान ज्ञात कीजिए।

SSC CHSL MAINS 02/11/2023 (Shift- 01)

(a) $8^4 \times 10^{-8}$ (b) $8^3 \times 10^{-9}$

(c) $8^3 \times 10^{-8}$ (d) $8^4 \times 10^{-9}$

$$\sqrt{\dfrac{0.0004}{0.16}} \times \sqrt[3]{\dfrac{0.000008 \times 0.729}{125000}}$$

$$\overset{A \times B}{}$$

$$\times \sqrt[4]{\dfrac{0.0016}{16000 \times 810}}$$

$$=$$

18. If $A = \dfrac{\sqrt{0.0004} \times \sqrt[3]{0.000008}}{\sqrt[4]{16000} \times \sqrt[3]{125000} \times \sqrt[4]{810}}$ and

$B = \dfrac{\sqrt[3]{0.729} \times \sqrt[4]{0.0016}}{\sqrt{0.16}}$, then what is $A \times B$?

यदि $A = \dfrac{\sqrt{0.0004} \times \sqrt[3]{0.000008}}{\sqrt[4]{16000} \times \sqrt[3]{125000} \times \sqrt[4]{810}}$ और $B =$

$\dfrac{\sqrt[3]{0.729} \times \sqrt[4]{0.0016}}{\sqrt{0.16}}$ है, तो $A \times B$ क्या है?

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(a) 5×10^{-8}

(b) 7×10^{-7}

(c) $\left(\dfrac{7}{4}\right) \times 10^{-8}$

(d) 6×10^{-8}

$$\sqrt{\dfrac{0.0004}{0.16}} \times \overset{A \ \times \ B}{\sqrt[3]{\dfrac{0.000008 \times 0.729}{125000}}} \times \sqrt[4]{\dfrac{0.0016}{16000 \times 810}}$$

$$= \sqrt{\dfrac{\dfrac{\cancel{400}}{\cancel{16000}}}{400}} \times \sqrt[3]{\dfrac{8 \times 729}{125 \times 10^{12}}} \times \sqrt[4]{\dfrac{\cancel{16}\ 1}{\cancel{16} \times 81 \times 10^{8}}}$$

$$= \dfrac{1}{10^{1}\ \cancel{20}} \times \dfrac{\cancel{2} \times \cancel{9}\ ^{3}}{5 \times 10^{4}} \times \dfrac{1}{\cancel{3} \times 10^{2}} \ = \ \dfrac{3}{5 \times 10^{4}} \ = \ \dfrac{6}{10^{1} \times 10^{7}} \ = \ \dfrac{6}{10^{8}} \ = \ 6 \times 10^{-8}$$

$$\sqrt{\frac{\overset{81}{324} \times \overset{9}{81} \times \overset{289}{624}}{15625 \times \overset{289}{289} \times \overset{729}{729} \times 64} \times \frac{\overset{109}{109}}{\overset{109}{109}}}$$

$$= \sqrt{\frac{9}{15625}} = \frac{3 \times 8}{125 \times 8} = \frac{24}{1000} = 0.024$$

19. $\sqrt{\dfrac{0.324 \times 0.081 \times 4.624}{1.5625 \times 0.0289 \times 72.9 \times 64}}$ is

(a) 2.4

(b) 24

(c) 0.024

(d) 0.24

$$\sqrt{15625} = 125$$

20. What is the value of

$$\frac{\sqrt{29.16}}{\sqrt{1.1664}}+\frac{\sqrt{0.2916}}{\sqrt{116.64}}+\frac{\sqrt{0.0036}}{\sqrt{0.36}} ?$$

$$\frac{\sqrt{29.16}}{\sqrt{1.1664}}+\frac{\sqrt{0.2916}}{\sqrt{116.64}}+\frac{\sqrt{0.0036}}{\sqrt{0.36}} \text{ का मान क्या है?}$$

$$\sqrt{\frac{2916 \times 10000}{11664 \times 100}} + \sqrt{\frac{2916 \times 100}{11664 \times 10000}} + \sqrt{\frac{36 \times 100}{36 \times 10000}}$$

$$= \frac{10}{2} + \frac{1}{20} + \frac{1}{10}$$

$$= \frac{100 + 1 + 2}{20} = \frac{103}{20}$$

(a) $\dfrac{101}{20}$

(b) $\dfrac{103}{20}$

(c) $\dfrac{26}{5}$

(d) $\dfrac{27}{5}$

$$\sqrt{\dfrac{\cancel{124} \times \cancel{279}\ 31}{\underset{66}{\cancel{264}} \times \underset{66}{\cancel{594}}}}$$

$$= \sqrt{\dfrac{31 \times 31}{66 \times 66}} = \dfrac{31}{66}$$

21. Find the value of $\dfrac{\sqrt{1.24} \times \sqrt{2.79}}{\sqrt{2.64} \times \sqrt{5.94}}$

$\dfrac{\sqrt{1.24} \times \sqrt{2.79}}{\sqrt{2.64} \times \sqrt{5.94}}$ का मान ज्ञात कीजिए।

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(a) $\dfrac{31}{44}$

(b) $\dfrac{33}{64}$

(c) $\dfrac{31}{66}$

(d) $\dfrac{33}{31}$

$$7 < 9 \qquad \sqrt{8} < \sqrt{11}$$

$$49 < \underline{81}$$

$$\underline{\underline{23}} \quad \sqrt{520}$$

$$529 > 520$$

22. Which is the largest among the numbers,

$\sqrt{5}, \sqrt[3]{7}, \sqrt[4]{13}$

जो संख्याओं $\sqrt{5}, \sqrt[3]{7}, \sqrt[4]{13}$ में सबसे बड़ी है

(a) $\sqrt{5}$

(b) $\sqrt[3]{7}$

(c) $\sqrt[4]{13}$

(d) All are equal

$\sqrt{5} \qquad \sqrt[3]{7} \qquad \sqrt[4]{13}$

$= 5^{\frac{1}{2}} \qquad 7^{\frac{1}{3}} \qquad 13^{\frac{1}{4}}$

$LCM(2,3,4) = 12$

$= 5^{\frac{1}{2} \times 12 \;^6} \qquad 7^{\frac{1}{3} \times 12 \;^4} \qquad 13^{\frac{1}{4} \times 12 \;^3}$

$= 5^6 \qquad 7^4 \qquad 13^3$

$= 15625 \qquad 2401 \qquad 2197$

$5^6 = \underline{5 \times 5} \times \underline{5 \times 5} \times \underline{5 \times 5}$

$\underbrace{7 \times 7} \times \underbrace{7 \times 7}$
$\quad 49 \qquad 49$

$$6^{\frac{1}{3} \times 6} \qquad 5^{\frac{1}{2} \times 6} \qquad 12^{\frac{1}{6} \times 6}$$

$$6^2 \qquad\qquad 5^3 \qquad\qquad 12^1$$

$$36 \qquad \boxed{125} \qquad 12$$

23. Which one among $\sqrt[3]{6}, \sqrt[2]{5}$ and $\sqrt[6]{12}$ is the largest?

$\sqrt[3]{6}, \sqrt[2]{5}$ और $\sqrt[6]{12}$ में से कौन सबसे बड़ा है?

(a) $\sqrt[3]{6}$

(b) $\sqrt[2]{5}$ ✓

(c) $\sqrt[6]{12}$

(d) All are equal

$8^{\frac{1}{2} \times 20}$ $13^{\frac{1}{4} \times 20}$ $16^{\frac{1}{5} \times 20}$ $41^{\frac{1}{10} \times 20}$

8^{10} 13^{5} 16^{4} 41^{2}

$(8^2)^5$ 13^5 $(16^2)^2$

$(64)^5$ $(13)^5$ $(256)^2$ 41^2

24. The greatest among the numbers

$\sqrt[2]{8}, \sqrt[4]{13}, \sqrt[5]{16}, \sqrt[10]{41}$ is:

$\sqrt[2]{8}, \sqrt[4]{13}, \sqrt[5]{16}, \sqrt[10]{41}$ में सबसे बड़ी संख्या है:

(a) $\sqrt[4]{13}$

(b) $\sqrt[5]{16}$

(c) $\sqrt[10]{41}$

(d) $\sqrt[2]{8}$

$$\sqrt[3]{11} \qquad \sqrt{5} \qquad 2\sqrt[6]{3}$$

$$(11)^{\frac{1}{3} \times 6} \qquad (5)^{\frac{1}{2} \times 6} \qquad 2^6 \times (3)^{\frac{1}{6} \times 6}$$

$$11^2 \qquad 5^3 \qquad 2^6 \times 3$$

$$121 < 125 < 192$$

25. Which shows the correct ascending order of the given value?

कौन –सा दिए गए मानों को सही बढ़ते हुए क्रम में सही दर्शाता है?

DOE PRT 11/11/2019 (Shift- 03)

(a) $\sqrt{5}, \sqrt[3]{11}, 2\sqrt[6]{3}$

(b) $\sqrt{5}, 2\sqrt[6]{3}, \sqrt[3]{11}$

(c) $\sqrt[3]{11}, \sqrt{5}, 2\sqrt[6]{3}$ ✓

(d) $2\sqrt[6]{3}, \sqrt{5}, \sqrt[3]{11}$

$4^{\frac{12}{3}}$ $2^{\frac{12}{2}}$ $3^{\frac{12}{6}}$ $5^{\frac{12}{4}}$

4^4 2^6 3^2 5^3

256   64   9   125

$$\sqrt[3]{4} > \sqrt[4]{5} > \sqrt{2}, \sqrt[6]{3}$$

26. **Arranging the following in descending order, we get** $\sqrt[3]{4}, \sqrt{2}, \sqrt[6]{3}, \sqrt[4]{5}$

निम्नलिखित को अवरोही क्रम में व्यवस्थित करने पर, हमें $\sqrt[3]{4}, \sqrt{2}, \sqrt[6]{3}, \sqrt[4]{5}$ प्राप्त होता है

(a) $\sqrt[3]{4} > \sqrt[4]{5} > \sqrt{2} > \sqrt[6]{3}$

(b) $\sqrt[4]{5} > \sqrt[3]{4} > \sqrt[6]{3} > \sqrt{2}$

(c) $\sqrt{2} > \sqrt[6]{3} > \sqrt[3]{4} > \sqrt[4]{5}$

(d) $\sqrt[6]{3} > \sqrt[4]{5} > \sqrt[3]{4} > \sqrt{2}$

27. The greatest of the number

$$\sqrt[2]{8}, \sqrt[4]{13}, \sqrt[5]{16}, \sqrt[10]{41}$$

$\sqrt[2]{8}, \sqrt[4]{13}, \sqrt[5]{16}, \sqrt[10]{41}$ की सबसे बड़ी संख्या

(a) $\sqrt[4]{13}$

(b) $\sqrt[5]{16}$

(c) $\sqrt[10]{41}$

(d) $\sqrt[2]{8}$

$8^{\frac{2}{2}}$ $13^{\frac{1}{4}}$ $16^{\frac{2}{5}}$ $41^{\frac{1}{10}}$

8^2 13^1 16^2 41^1

(64) 13 (256) 41

$8^{\frac{1}{2}}$ $16^{\frac{1}{5}}$

$(2^3)^{\frac{1}{2}}$ $(2^4)^{\frac{1}{5}}$

$2^{\frac{3}{2}} > 2^{\frac{4}{5}}$

$$10^{\frac{12}{6}} \qquad 25^{\frac{12}{12}} \qquad 3^{\frac{12}{4}}$$

$$10^{2} \qquad 25^{1} \qquad 3^{3}$$

$$100 \qquad 25 \qquad 27$$

$$\sqrt[6]{10} , \sqrt[4]{3} \quad \sqrt[12]{25}$$

28. Which one correctly represents the given values in descending order?

कौन सा दिए गए मानों को घटते हुए क्रम में सही दर्शाता है?

DOE PRT 11/11/2019 (Shift- 02)

(a) $\sqrt[12]{25}, \sqrt[6]{10}, \sqrt[4]{3}$

(b) $\sqrt[4]{3}, \sqrt[12]{25}, \sqrt[6]{10}$

(c) $\sqrt[6]{10}, \sqrt[12]{25}, \sqrt[4]{3}$

(d) $\sqrt[6]{10}, \sqrt[4]{3}, \sqrt[12]{25}$

29. The greatest among the numbers

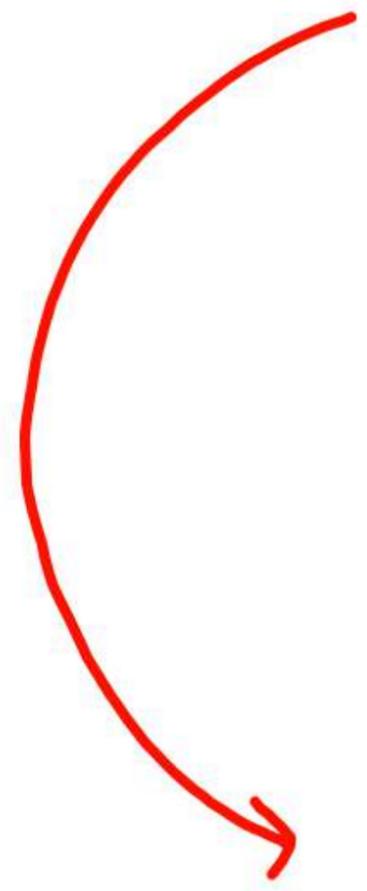$\sqrt{0.09}$, $\sqrt[3]{0.064}$, 0.5 and $\frac{3}{5}$ is

$\sqrt{0.09}$, $\sqrt[3]{0.064}$, 0.5 और $\frac{3}{5}$ में से सबसे बड़ी संख्या है

(a) $\sqrt{0.09}$

(b) $\frac{3}{5}$

(c) 0.5

(d) $\sqrt[3]{0.064}$

0.3   0.4   0.5   0.6

T-1

$$\sqrt{2} \qquad \sqrt[3]{3} \qquad \sqrt[4]{4}$$

Sol^n
(power का
LCM)

$$2^{\frac{1}{2}} \qquad 3^{\frac{1}{3}} \qquad 4^{\frac{1}{4}}$$

$$2^{\frac{1}{2}\times 12} \qquad 3^{\frac{1}{3}\times 12} \qquad 4^{\frac{1}{4}\times 12}$$

$$2^6 \qquad 3^4 \qquad 4^3$$

$$64 \qquad \boxed{81} \qquad 64$$

Type-2

$$2^{40} \qquad 3^{20} \qquad 4^{10}$$

$$HCF(40, 20, 10) = 10$$

$$(2^4)^{10} \qquad (3^2)^{10} \qquad (4^1)^{10}$$

$$16^{10} \qquad 9^{10} \qquad 4^{10}$$

greatst $= 2^{40}$

30. Arranging the following in ascending order 3^{34}, 2^{51}, 7^{17} we get

निम्नलिखित को आरोही क्रम में व्यवस्थित करना 3^{34}, 2^{51}, 7^{17} हम प्राप्त करते हैं

(a) $3^{34} < 2^{51} < 7^{17}$

(b) $7^{17} < 2^{51} < 3^{34}$

(c) $3^{34} < 7^{17} < 2^{51}$

(d) $2^{51} < 3^{34} < 7^{17}$

$$3^{34} \qquad 2^{51} \qquad 7^{17}$$

$$\text{HCF } (34, 51, 17) = 17$$

$$7^{17} < 2^{51} < 3^{34}$$

$$(3^2)^{17} \quad (2^3)^{17} \quad (7^1)^{17}$$

$$9^{17} \qquad 8^{17} \qquad 7^{17}$$

$HCF(250, 150, 100, 200) = 50$

31. The smallest among the numbers 2^{250}, 3^{150}, 5^{100} and 4^{200}

2^{250}, 3^{150}, 5^{100} और 4^{200} संख्याओं में सबसे छोटी

(a) 4^{200}

(b) 5^{100} ✓

(c) 3^{150}

(d) 2^{250}

$$2^{250} \qquad 3^{150} \qquad 5^{100} \qquad 4^{200}$$

$$(2^5)^{50} \qquad (3^3)^{50} \qquad (5^2)^{50} \qquad (4^4)^{50}$$

$$32^{50} \qquad 27^{50} \qquad 25^{50} \qquad 256^{50}$$

$$(22.5)^{27} \quad (7.5)^{54}$$

$$HCF(27, 54) = 27$$

$$\left(22.5^{1}\right)^{24} \quad \left(7.5^{2}\right)^{24}$$

$$\left(22.5\right)^{24} \quad \left(56.25\right)^{27}$$

32. Which of the following is true?

निम्नलिखित में से कौन सा सही है?

(a) $(22.5)^{27} > (7.5)^{54}$ (b) $(22.5)^{27} < (7.5)^{54}$

(c) $(22.5)^{27} = (7.5)^{54}$ (d) $(22.5)^{27} \geq (7.5)^{54}$

$$(85)^{2} = 7225$$
$$(75)^{2} = 5625$$

Type: 1 (Sum same)

$$\sqrt{8} + \sqrt{2}, \quad \sqrt{7} + \sqrt{3}, \quad \sqrt{6} + \sqrt{4}$$

Gap

6

4

2

$$(\sqrt{8}+\sqrt{2})^2 = 8 + 2 + 2\sqrt{16} \quad S$$

$$(\sqrt{7}+\sqrt{3})^2 = 7 + 3 + 2\sqrt{21}$$

$$(\sqrt{6}+\sqrt{4})^2 = 6 + 4 + 2\sqrt{24} \quad L$$

gap ↓ value ↑

$$\left(\sqrt{6}+\sqrt{2}\right) < \left(\sqrt{5}+\sqrt{3}\right)$$

Gap   4   2

          S   L

33. Choose the incorrect reaction(s) from the following:

निम्नलिखित में से गलत प्रतिक्रिया चुनें:

✗ (i) $\sqrt{6}+\sqrt{2} = \sqrt{5}+\sqrt{3}$

(ii) $\sqrt{6}+\sqrt{2} < \sqrt{5}+\sqrt{3}$

✗ (iii) $\sqrt{6}+\sqrt{2} > \sqrt{5}+\sqrt{3}$

(a) (ii) and (iii)

(b) (i)

(c) (i) and (ii)

(d) (i) and (iii)

Condition → Sum same

34. Which value among $\sqrt{11} + \sqrt{5}$, $\sqrt{14} + \sqrt{2}$, $\sqrt{8} + \sqrt{8}$, is the largest?

$\overset{6}{\sqrt{11} + \sqrt{5}}$, $\overset{12}{\sqrt{14} + \sqrt{2}}$, $\overset{0}{\sqrt{8} + \sqrt{8}}$ में से कौन सा मान सबसे बड़ा है:

(a) $\sqrt{11} + \sqrt{5}$

(b) $\sqrt{14} + \sqrt{2}$

(c) $\sqrt{8} + \sqrt{8}$ ✓

(d) All are equal

35. Which one among $\sqrt{10} + \sqrt{4}$, $\sqrt{11} + \sqrt{3}$, $\sqrt{7} + \sqrt{7}$ is the smallest number?

$\sqrt{10} + \sqrt{4}$, $\sqrt{11} + \sqrt{3}$, $\sqrt{7} + \sqrt{7}$ में से सबसे छोटी संख्या कौन सी है:

(a) $\sqrt{10} + \sqrt{4}$

(b) $\sqrt{11} + \sqrt{3}$

(c) $\sqrt{7} + \sqrt{7}$

(d) All are equal

36. Which of the following statements(s) is/are true?

निम्नलिखित में से कौन सा/से कथन सत्य है/हैं?

I. $\sqrt{11} + \sqrt{7} < \sqrt{10} + \sqrt{8}$

II. $\sqrt{17} + \sqrt{11} > \sqrt{15} + \sqrt{13}$

(a) Only I

(b) Only II

(c) Both I and II

(d) Neither I nor II

37. Which is largest among $\sqrt{16}+2$, $\sqrt{19}+1$ and $\sqrt{18}+\sqrt{2}$

$\sqrt{16}+2$, $\sqrt{19}+1$ तथा $\sqrt{18}+\sqrt{2}$ में से कौन सबसे बड़ा है?

(a) $\sqrt{19}+1$

(b) $\sqrt{16}+2$

(c) All are equal

(d) $\sqrt{18}+2$

$(\sqrt{16}+2)$ $(\sqrt{19}+1)$ $(\sqrt{18}+\sqrt{2})$

$(\sqrt{16}+\sqrt{4})$ $(\sqrt{19}+\sqrt{1})$ $(\sqrt{18}+\sqrt{2})$

12 18 16

L S

$$x \qquad y \qquad z$$

$$(\sqrt{12}+\sqrt{20}) \quad (\sqrt{15}+\sqrt{17}) \quad (\sqrt{14}+\sqrt{18})$$

वर्ग

$$8 \qquad\qquad 2 \qquad\qquad 4$$

$$x < z < y$$

38. If $x = \sqrt{12} + \sqrt{20}$, $y = \sqrt{15} + \sqrt{17}$ and $z = \sqrt{14} + \sqrt{18}$. Which of the following holds true?

यदि $x = \sqrt{12} + \sqrt{20}$, $y = \sqrt{15} + \sqrt{17}$ और $z = \sqrt{14} + \sqrt{18}$. निम्नलिखित में से कौन सा सत्य है?

(a) $x < y < z$

(b) $y < z < x$

(c) $y < x < z$

(d) $x < z < y$
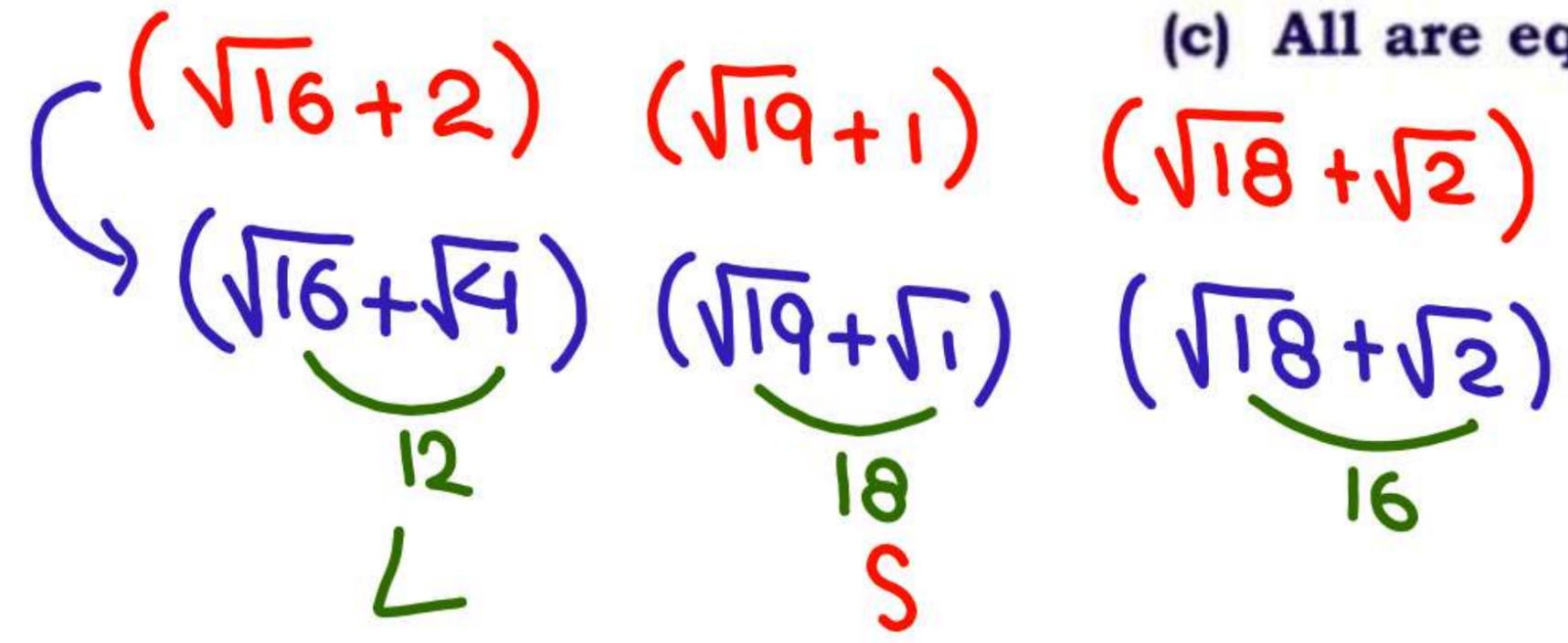
Type 2: (Difference Same)

$$(\sqrt{11} - \sqrt{10}) \qquad (\sqrt{10} - \sqrt{9}) \qquad (\sqrt{9} - \sqrt{8})$$

$$(\sqrt{11} - \sqrt{10})^2 = 11 + 10 - 2\sqrt{110} = 21 - 2\sqrt{110} \approx 0.0238 \quad \text{Ⓢ}$$

$$(\sqrt{10} - \sqrt{9})^2 = 10 + 9 - 2\sqrt{90} = 19 - 2\sqrt{90} \approx 0.0263$$

$$(\sqrt{9} - \sqrt{8})^2 = 9 + 8 - 2\sqrt{72} = 14 - 2\sqrt{72} \approx 0.0294 \quad \text{Ⓛ}$$

digit ↑   value ↓

$$\left(\sqrt{10} - \sqrt{9}\right) > \left(\sqrt{2000} - \sqrt{1999}\right)$$

<u>Note:</u>

अगर diff same है तो छोटा digit वाला संख्या largest होगा तथा बड़े ,, ,, ,, Smallest ,,

39. Arranging $a = \sqrt{6} - \sqrt{5}, b = \sqrt{5} - \sqrt{4}, c = \sqrt{4} - \sqrt{3}$ in ascending order, we get.

$a = \sqrt{6} - \sqrt{5}, b = \sqrt{5} - \sqrt{4}, c = \sqrt{4} - \sqrt{3}$ को आरोही क्रम में रखने पर, हम पाते हैं।

(a) $c < b < a$

(b) $b < a < c$

(c) $a < c < b$

(d) $a < b < c$

$a < b < c$

40. The greatest among $\sqrt{7}-\sqrt{5},\sqrt{5}-\sqrt{3},\sqrt{9}-\sqrt{7}$, $\sqrt{11}-\sqrt{9}$ is

$\sqrt{7}-\sqrt{5},\sqrt{5}-\sqrt{3},\sqrt{9}-\sqrt{7},\sqrt{11}-\sqrt{9}$ में सबसे बड़ा है

(a) $\sqrt{7}-\sqrt{5}$

(b) $\sqrt{5}-\sqrt{3}$

(c) $\sqrt{9}-\sqrt{7}$

(d) $\sqrt{11}-\sqrt{9}$

The greatest among $\sqrt{7}-\sqrt{5},\ \sqrt{5}-\sqrt{3},\ \sqrt{9}-\sqrt{7},$ $\sqrt{11}-\sqrt{9}$ is

$\sqrt{7}-\sqrt{5},\ \sqrt{5}-\sqrt{3},\ \sqrt{9}-\sqrt{7},\ \sqrt{11}-\sqrt{9}$ में सबसे बड़ा है

(a) $\sqrt{7}-\sqrt{5}$

(b) $\sqrt{5}-\sqrt{3}$

(c) $\sqrt{9}-\sqrt{7}$

(d) $\sqrt{11}-\sqrt{9}$

digit ↓   value ↑

Type: (Product Same)

$$(\sqrt{9} + \sqrt{4}) \quad (\sqrt{12} + \sqrt{3}) \quad (\sqrt{18} + \sqrt{2})$$

Gap

5

9

16

$$(\sqrt{9} + \sqrt{4})^2 = \underbrace{9 + 4}_{13} + \underbrace{2\sqrt{36}}$$

$$(\sqrt{12} + \sqrt{3})^2 = \underbrace{12 + 3}_{15} + \underbrace{2\sqrt{36}}$$

$$(\sqrt{18} + \sqrt{2})^2 = \underbrace{18 + 2}_{20} + \underbrace{2\sqrt{36}}$$

Ex:- Same Sum

$$(\sqrt{7} + \sqrt{1}) < (\sqrt{6} + \sqrt{2})$$

gap   6   4

gap ↓   value ↑

Ex:- Same Product

$$(\sqrt{8} + \sqrt{3}) > (\sqrt{6} + \sqrt{4})$$

gap   5   2

Sum   11   10

gap/sum ↑   value ↑

Ex:- Same diff.

$$(\sqrt{9} - \sqrt{7}) < (\sqrt{7} - \sqrt{5})$$

digit ↓   value ↑

42. **Which is the greatest among ?**

$$\underbrace{\sqrt{6}+\sqrt{4}}_{24}, \underbrace{\sqrt{8}+\sqrt{3}}_{24}, \underbrace{\sqrt{12}+\sqrt{2}}_{24} \text{ and } \underbrace{\sqrt{24}+\sqrt{1}}_{24}$$

$\sqrt{6}+\sqrt{4}, \sqrt{8}+\sqrt{3}, \sqrt{12}+\sqrt{2}$ और $\sqrt{24}+\sqrt{1}$ में सबसे बड़ा कौन है?

(a) $\sqrt{6}+\sqrt{4}$

(b) $\sqrt{8}+\sqrt{3}$

(c) $\sqrt{12}+\sqrt{2}$

(d) $\sqrt{24}+\sqrt{1}$

Sum: 10   11   14   25

43. Which is the smallest among ?

$$\sqrt{5} - \sqrt{4}, \ \sqrt{10} - \sqrt{2}, \ \sqrt{20} - \sqrt{1}$$

$\sqrt{5} - \sqrt{4}, \ \sqrt{10} - \sqrt{2}, \ \sqrt{20} - \sqrt{1}$ में सबसे छोटा कौन है?

(a) $\sqrt{5} - \sqrt{4}$

(b) $\sqrt{10} - \sqrt{2}$

(c) $\sqrt{20} - \sqrt{1}$

(d) All are equal

gap $\underset{\text{Smallest}}{\underline{1}}$ 8 $\underset{\text{Largest}}{19}$

43. Which is the smallest among ?

$$\sqrt{5} - \sqrt{4}, \ \sqrt{10} - \sqrt{2}, \ \sqrt{20} - \sqrt{1}$$

$\sqrt{5} - \sqrt{4}, \ \sqrt{10} - \sqrt{2}, \ \sqrt{20} - \sqrt{1}$ में सबसे छोटा कौन है?

(a) $\sqrt{5} - \sqrt{4}$

(b) $\sqrt{10} - \sqrt{2}$

(c) $\sqrt{20} - \sqrt{1}$

(d) All are equal

Sum: 9   12   21

↓

Smallest

$$3^{3^2} \qquad (3^3)^2$$

$$= 3^9 > 3^6$$

44. Which of the following is greatest?
निम्न में से कौन सबसे बड़ा है।

(a) 3^{2^3}

(b) 3^{3^2}

(c) 2^{3^2}

(d) $(2^3)^2$

(a) $3^{2^3} = 3^8$

(b) $3^{3^2} = 3^9$

(c) $2^{3^2} = 2^9$

(d) $(2^3)^2 = 2^6$

$2^6 < 2^9 < 3^8 < 3^9$

45. Which of the following is greatest?

निम्न में से कौन सबसे बड़ा है।

(a) ~~3333~~   (b) 333^3

(c) 3^{333} (d) $3^{3^{3^3}}$

$$3333 < 333^3 < 3^{333} < 3^{3^{3^3}}$$

$$3^{333} \qquad 3^{3^{3^{24}}}$$

$$333 \qquad 3^{24}$$

$$333 < 3\times3\times3\times3\times3\times3\ \_\ \_\ \_\times24\ बार$$

3^{333} $3^{3^{3^3}}$

45. Which of the following is greatest?

निम्न में से कौन सबसे बड़ा है।

3^{333} $3^{3^{24}}$

(a) ~~3333~~   (b) ~~333³~~

(c) 3^{333} (d) $3^{3^{3^3}}$

$3^{333} < 3^{3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 \ldots \ldots \times 24 बार}$

TYPE - 03

INFINITE SERIES

Let $x = \sqrt{a\sqrt{a\sqrt{a\ldots\infty}}}$

$$(x)^2 = \left(\sqrt{a\sqrt{a\sqrt{a\ldots\infty}}}\right)^2$$

$$\Rightarrow x^2 = a\sqrt{a\sqrt{a\sqrt{a\ldots\infty}}}$$

$$\Rightarrow \cancel{x^2} = a \times \cancel{x}$$

$$\Rightarrow \boxed{x = a}$$

46. Find the value of $\sqrt{a\sqrt{a\sqrt{a\ldots\infty}}}$

$\sqrt{a\sqrt{a\sqrt{a\ldots\infty}}}$ का मान ज्ञात कीजिए।

(a) a ✓

(b) a^2

(c) a^3

(d) 0

47. $\sqrt{3\sqrt{3\sqrt{3.....}}}$ is equal to.

$\sqrt{3\sqrt{3\sqrt{3.....}}}$ के बराबर है:

(a) $\sqrt{3}$

(b) 3

(c) $2\sqrt{3}$

(d) $3\sqrt{3}$

48. If $x = \sqrt{4\sqrt{4\sqrt{4\sqrt{4\ldots}}}}$, then what is the value of x?

यदि $x = \sqrt{4\sqrt{4\sqrt{4\sqrt{4\ldots}}}}$ है, तो x का मान क्या है?

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(a) 2

(b) 4

(c) 8

(d) 16

49. $\sqrt{7\sqrt{7\sqrt{7\sqrt{7....\infty}}}} = 343^{y-1}$ then y = ?

$\sqrt{7\sqrt{7\sqrt{7\sqrt{7....\infty}}}} = 343^{y-1}$ तो y = ?

$$7^1 = (7^3)^{y-1}$$

$$7^1 = 7^{3y-3}$$

$$\Rightarrow 1 = 3y - 3$$

$$\Rightarrow 4 = 3y$$

$$\Rightarrow \boxed{\frac{4}{3} = y}$$

(a) $\dfrac{4}{3}$

(b) $\dfrac{3}{2}$

(c) $\dfrac{5}{1}$

(d) 1

$$\because a^m = a^n$$
$$\therefore m = n$$

Basic

$$x = \sqrt{2\sqrt[3]{4\sqrt{2\sqrt[3]{4....\infty}}}}$$

$$\Rightarrow x^2 = \left(\sqrt{2\sqrt[3]{4\sqrt{2\sqrt[3]{4..\infty}}}}\right)^2$$

$$\Rightarrow x^2 = 2\sqrt[3]{4\sqrt{2\sqrt[3]{4...\infty}}}$$

$$\Rightarrow (x^2)^3 = (2)^3\left(\sqrt[3]{4\sqrt{2\sqrt[3]{4..\infty}}}\right)^3$$

$$\Rightarrow x^6 = 8 \times 4\sqrt{2\sqrt[3]{4..\infty}}$$

$$\Rightarrow x^5 x^6 = 32 \times x$$

$$\Rightarrow x^5 = 2^5$$

$$\therefore \boxed{x = 2}$$

50. The value of $\sqrt{2\sqrt[3]{4\sqrt{2\sqrt[3]{4\sqrt{2\sqrt[3]{4....}}}}}}$ is

$\sqrt{2\sqrt[3]{4\sqrt{2\sqrt[3]{4\sqrt{2\sqrt[3]{4....}}}}}}$ का मान है

(a) 2

(b) 2^2

(c) 2^3

(d) 2^5

$$x = \sqrt{27 \div \sqrt{27 \div \sqrt{27 \div \ldots \infty}}}$$

$$\Rightarrow x^2 = 27 \div \sqrt{27 \div \sqrt{27 \div \ldots \infty}}$$

$$\Rightarrow x^2 = 27 \div x$$

$$\Rightarrow x^2 = \frac{27}{x}$$

$$\Rightarrow x^3 = 27 \quad \Rightarrow x^3 = 3^3$$

$$\therefore x = 3$$

51. $\sqrt{27 \div \sqrt{27 \div \sqrt{27 \div \ldots \infty}}} = ?$

$\sqrt{27 \div \sqrt{27 \div \sqrt{27 \div \ldots \infty}}} = ?$

(a) $\sqrt[3]{27} = 3$ (b) 27

(c) $\sqrt[2]{27}$ (d) $\sqrt[4]{27}$

$$\sqrt{x}^{\sqrt{x}^{\sqrt{x}^{\sqrt{x} \cdots \cdots \infty}}} = \frac{1}{2}$$

$$\Rightarrow \left(\sqrt{x}\right)^{\frac{1}{2}} = \frac{1}{2}$$

$$\Rightarrow \left(x^{\frac{1}{2}}\right)^{\frac{1}{2}} = \frac{1}{2}$$

$$\Rightarrow x^{\frac{1}{4}} = \frac{1}{2}$$

$$\Rightarrow x^{\frac{1}{4} \times 4} = \left(\frac{1}{2}\right)^{4}$$

$$x = \frac{1}{16}$$

52. If $\sqrt{x}^{\sqrt{x}^{\sqrt{x}^{\sqrt{x} \cdots \cdots \infty}}} = \frac{1}{2}$ then $x = ?$

यदि $\sqrt{x}^{\sqrt{x}^{\sqrt{x}^{\sqrt{x} \cdots \cdots \infty}}} = \frac{1}{2}$ तो $x = ?$

(a) $\frac{1}{8}$

(b) $\frac{1}{4}$

(c) $\frac{1}{16}$

(d) $\frac{1}{32}$

$$\sqrt{x^{\sqrt{x}^{\sqrt{x}\,\cdots\cdots\infty}}}$$

$$\sqrt{x} = \frac{1}{2}$$

$$\Rightarrow \left(\sqrt{x}\right)^{\frac{1}{2}} = \frac{1}{2}$$

$$\Rightarrow \left(\sqrt{x}\right)^{\frac{1}{2}\times 2} = \left(\frac{1}{2}\right)^{2}$$

$$\Rightarrow \sqrt{x} = \frac{1}{4}$$

$$\Rightarrow x = \frac{1}{16}$$

52. If $\sqrt{x^{\sqrt{x}^{\sqrt{x}^{x^{\cdots\cdots\infty}}}}} = \frac{1}{2}$ then $x = $?

यदि $\sqrt{x^{\sqrt{x}^{\sqrt{x}^{\sqrt{x}^{x^{\cdots\cdots\infty}}}}}} = \frac{1}{2}$ तो $x = $?

(a) $\dfrac{1}{8}$

(b) $\dfrac{1}{4}$

(c) $\dfrac{1}{16}$

(d) $\dfrac{1}{32}$

Type-1

$$\sqrt{a\sqrt{a\sqrt{a\ldots\infty}}} = a$$

$$\sqrt{a\sqrt{a\ldots n\ terms}} = a^{\frac{2^n-1}{2^n}}$$

* $\sqrt{3\sqrt{3\sqrt{3}}}$

$$3^{\frac{2^3-1}{2^3}}$$

$$= 3^{\frac{7}{8}}$$

$2^3 = 8$

$$ans = 3^{\frac{7}{8}}$$

$2^4 = 16$

Ans $= a^{\frac{15}{16}}$

53. Find the value of $\sqrt{a\sqrt{a\sqrt{a\sqrt{a}}}}$

$\sqrt{a\sqrt{a\sqrt{a\sqrt{a}}}}$ का मान ज्ञात कीजिए–

(a) $a^{\frac{7}{8}}$

(b) $a^{\frac{15}{16}}$

(c) a

(d) a^4

$$2^6 = 64$$

$$ans = 7^{\frac{63}{64}}$$

54. Find the value of $\sqrt{7\sqrt{7\sqrt{7\sqrt{7\sqrt{7\sqrt{7}}}}}}$

$\sqrt{7\sqrt{7\sqrt{7\sqrt{7\sqrt{7\sqrt{7}}}}}}$ का मान ज्ञात कीजिए-

(a) $7^{\frac{63}{64}}$

(b) $7^{\frac{31}{32}}$

(c) $7^{\frac{15}{16}}$

(d) 7^7

$$2^6 = 64$$

$$ans = 12^{\frac{63}{64}}$$

55. Find $\sqrt{12\sqrt{12\sqrt{12\sqrt{12\sqrt{12\sqrt{12}}}}}}$ =?

$\sqrt{12\sqrt{12\sqrt{12\sqrt{12\sqrt{12\sqrt{12}}}}}}$ का मान ज्ञात करें

(a) $12^{\frac{32}{31}}$

(b) $12^{\frac{64}{63}}$

(c) $12^{\frac{31}{32}}$

(d) $12^{\frac{63}{64}}$

$$* \quad x = \sqrt{\boxed{6} + \sqrt{6 + \sqrt{6 + \ldots \infty}}}$$

Trick: $\quad 3 \times 2$

$$\boxed{x = 3}$$

$$* \quad y = \sqrt{6 - \sqrt{6 - \sqrt{6 - \ldots \infty}}}$$

$3 \times \boxed{2}$

$$\boxed{y = 2}$$

56. $\sqrt{12 + \sqrt{12 + \sqrt{12 + \ldots}}}$ is equal to.

$\sqrt{12 + \sqrt{12 + \sqrt{12 + \ldots}}}$ के बराबर है:

(a) 3   (b) 4

(c) 6   (d) 2

4×3

ans = 4

30

6 × 5

⊕　⊖
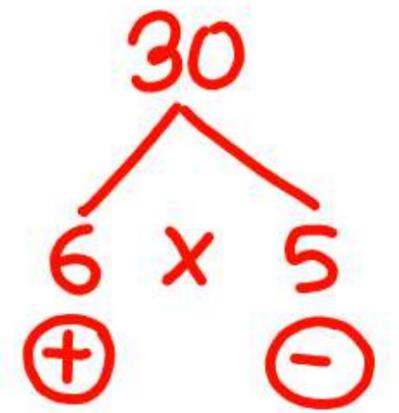
57. Find the value of

$$\sqrt{30 + \sqrt{30 + \sqrt{30 + \sqrt{30 + \ldots\ldots\infty}}}}$$

$$\sqrt{30 + \sqrt{30 + \sqrt{30 + \sqrt{30 + \ldots\ldots\infty}}}}$$

का मान ज्ञात कीजिए

(a) 3

(b) 4

(c) 5

(d) 6

58. Let $x = \sqrt{272+\sqrt{272+\sqrt{272+\sqrt{272+....+\infty}}}}$ then x equals

माना $x = \sqrt{272+\sqrt{272+\sqrt{272+\sqrt{272+....+\infty}}}}$ तो x बराबर है

(a) 16

(b) $4\sqrt{13}$

(c) 17

(d) 4.35

17×16

$\oplus \quad \ominus$

59. **Find the value of the given expression.**
दिए गए व्यंजक का मान ज्ञात कीजिए।

$$\sqrt{20-\sqrt{20-\sqrt{20-\sqrt{20-\ldots\ldots\infty}}}}$$

SSC CGL TIER- II 03/03/2023

(a) 4

(b) 6

(c) 5

(d) 2

5×4
⊖

60. What is the value of :

$$\left(\sqrt{72-\sqrt{72-\sqrt{72-....\infty}}}\right) \div \left(\sqrt{20-\sqrt{20-\sqrt{20-....\infty}}}\right)$$ का मान क्या है?

(handwritten) ans $= \dfrac{\cancel{8}}{\cancel{4}}\ 2$

(handwritten under 72) 9 (8)

(handwritten under 20) 5 4

(a) 4

(b) 2

(c) 3.6

(d) 8

61. Let $x = \sqrt{42 - \sqrt{42 - \sqrt{42 - \sqrt{42 - \ldots - \infty}}}}$ then x equals

माना $x = \sqrt{42 - \sqrt{42 - \sqrt{42 - \sqrt{42 - \ldots - \infty}}}}$ तो x बराबर है

7×6
+ -

(a) 6

(b) 7

(c) Between 6 and 7

(d) Greater than 7

$$* \quad x = \sqrt{a + \sqrt{a + \sqrt{a \ldots \ldots \infty}}}$$

$$* \quad y = \sqrt{a - \sqrt{a - \sqrt{a \ldots \infty}}}$$

Trick:

$$x = \frac{\sqrt{1 + 4a} + 1}{2}$$

Trick:

$$y = \frac{\sqrt{1 + 4a} - 1}{2}$$

62. $\sqrt{5 + \sqrt{5 + \sqrt{5 + \ldots \infty}}}$ = ?

a

(a) $\dfrac{\sqrt{21}+1}{2}$

(b) $\dfrac{\sqrt{21}-1}{2}$

(c) $\dfrac{\sqrt{21}+3}{2}$

(d) $\dfrac{\sqrt{21}-3}{2}$

$$\text{ans} = \frac{\sqrt{1+4a}+1}{2}$$

$$= \frac{\sqrt{21}+1}{2}$$

ans $= \dfrac{\sqrt{1+4a}+1}{2}$

$= \dfrac{\sqrt{125}+1}{2}$

$= \dfrac{5\sqrt{5}+1}{2}$

$= 2.5\sqrt{5}+0.5$

63. $\sqrt{31+\sqrt{31+\sqrt{31+\sqrt{31+\ldots\infty}}}}$ =?

(a) $5\sqrt{5}-1.5$

(b) $2.5\sqrt{5}+0.5$

(c) $\dfrac{5\sqrt{5}-1}{2}$

(d) $\dfrac{2\sqrt{31}+1}{2}$

64. $\sqrt{1-\sqrt{1-\sqrt{1-....\infty}}} = ?$

(a) $\dfrac{\sqrt{5}+1}{2}$

(b) $\dfrac{\sqrt{5}-1}{2}$

(c) $\dfrac{\sqrt{5}+3}{2}$

(d) $\dfrac{\sqrt{5}-3}{2}$

ans $= \dfrac{\sqrt{1+4a}-1}{2}$

$= \dfrac{\sqrt{5}-1}{2}$

$$\text{ans} = \frac{\sqrt{1+4a} - 1}{2}$$

$$= \frac{\sqrt{77} - 1}{2}$$

COMPLETE MATHS COURSE (For all govt. exams) BY ADITYA RANJAN SIR
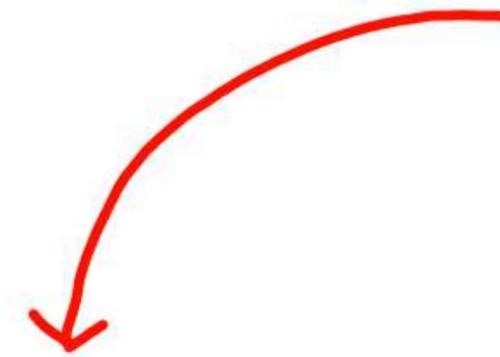
65. Find $\sqrt{19 - \sqrt{19 - \sqrt{19 - \sqrt{19....\infty}}}}$ = ?

$\sqrt{19 - \sqrt{19 - \sqrt{19 - \sqrt{19....\infty}}}}$ ज्ञात करें

(a) $\dfrac{\sqrt{77} - 1}{2}$ ✓

(b) $\dfrac{\sqrt{19} + 3}{2}$

(c) $\dfrac{\sqrt{77} + 1}{2}$

(d) Between 4 and 5

$$* \quad x = \sqrt{a + 1\sqrt{a + \sqrt{a \ldots \infty}}}$$

$$x = \frac{\sqrt{1 + 4a} + 1}{2}$$

$$* \quad y = \sqrt{a - \sqrt{a - \sqrt{a - \ldots \infty}}}$$

$$y = \frac{\sqrt{1 + 4a} - 1}{2}$$

$$* \quad x = \sqrt{a + b\sqrt{a + b\sqrt{a \ldots \infty}}}$$

$$x = \frac{\sqrt{b^2 + 4a} + b}{2}$$

$$* \quad y = \sqrt{a - b\sqrt{a - b\sqrt{a \ldots \infty}}}$$

$$y = \frac{\sqrt{b^2 + 4a} - b}{2}$$

$$* \quad x = \sqrt{a + b\sqrt{a + b\sqrt{a \ldots \infty}}}$$

$$* \quad y = \sqrt{a - b\sqrt{a - b\sqrt{a \ldots \infty}}}$$

$$x = \frac{\sqrt{b^2 + 4a} + b}{2} \quad \bigg| \quad y = \frac{\sqrt{b^2 + 4a} - b}{2}$$

$$* \quad x - y = \frac{\sqrt{b^2 + 4a} + b}{2} - \left(\frac{\sqrt{b^2 + 4a} - b}{2} \right)$$

$$= \frac{\sqrt{b^2 + 4a} + b - \sqrt{b^2 + 4a} + b}{2}$$

$$= \frac{2b}{2}$$

$$x \times y = \frac{(\sqrt{b^2 + 4a} + b) \times (\sqrt{b^2 + 4a} - b)}{2}$$

$$= \frac{(\sqrt{b^2 + 4a})^2 - (b^2)}{4}$$

$$= \frac{4a}{4} = a$$

$$x = \sqrt{\underset{a}{35} + \underset{b}{2}\sqrt{35 + 2\sqrt{35 . \_\_} \infty}}$$

$$y = \sqrt{35 - 2\sqrt{35 - 2\sqrt{35 . \_\_} \infty}}$$

* $x - y = b = 2$ 7-5

* $xy = a = 35$

7×5

$$x = \sqrt{35 + 2\sqrt{35 + 2\sqrt{35\ldots\ldots \infty}}}$$

a b

7×5

$\oplus$ $\ominus$
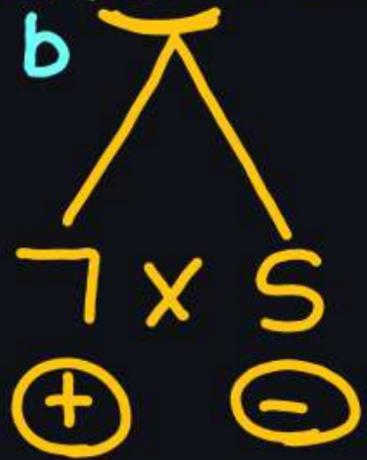
$$y = \sqrt{35 - 2\sqrt{35 - 2\sqrt{35\ldots \infty}}}$$

66. Find $\sqrt{35+2\sqrt{35+2\sqrt{35+2\sqrt{35+\ldots\infty}}}}$ =?

$$\overset{a}{\sqrt{35}}+\overset{b}{2}\overset{a}{\sqrt{35}}+2\sqrt{35+2\sqrt{35+\ldots\infty}}} \quad \text{ज्ञात करें}$$

(a) 6

(b) 7

(c) 5

(d) 6.4

$$x = \frac{\sqrt{b^2+4a}+b}{2}$$

$$= \frac{\sqrt{4+140}+2}{2}$$

$$= \frac{12+2}{2} = \boxed{7}$$

66. Find $\sqrt{35 + 2\sqrt{35 + 2\sqrt{35 + 2\sqrt{35 + \ldots\infty}}}}$ = ?

$\sqrt{35 + 2\sqrt{35 + 2\sqrt{35 + 2\sqrt{35 + \ldots\infty}}}}$ ज्ञात करें

(a) 6   7×5

(b) 7

(c) 5   ⊕ ⊖

(d) 6.4

M-1

$$ans = \frac{\sqrt{b^2 + 4a} - b}{2}$$

$$= \frac{\sqrt{9 + 616} - 3}{2}$$

$$= \frac{25 - 3}{2} = \frac{22}{2} \quad 11$$

67. Find $\sqrt{154 - 3\sqrt{154 - 3\sqrt{154 - 3\sqrt{154 - \ldots \infty}}}}$ =?

$\sqrt{\underset{a}{154} - 3\underset{b}{\sqrt{154 - 3\sqrt{154 - 3\sqrt{154 - \ldots \infty}}}}}$ ज्ञात करें?

(a) 13
(b) 14
(c) 11
(d) 9

67. Find $\sqrt{154 - 3\sqrt{154 - 3\sqrt{154 - 3\sqrt{154 - \ldots\infty}}}}$ =?

$\sqrt{154 - 3\sqrt{154 - 3\sqrt{154 - 3\sqrt{154 - \ldots\infty}}}}$ ज्ञात करें?

(a) 13

(b) 14

(c) 11

(d) 9

14   ×   (11)

3

68. If $P = \sqrt{11 + 3\sqrt{11 + 3\sqrt{11 + 3\sqrt{11 - ....\infty}}}}$ and

$Q = \sqrt{11 - 3\sqrt{11 - 3\sqrt{11 - 3\sqrt{11 - ....\infty}}}}$ then P + Q = ?

यदि $P = \sqrt{11 + 3\sqrt{11 + 3\sqrt{11 + 3\sqrt{11 - ....\infty}}}}$ और Q =

$\sqrt{11 - 3\sqrt{11 - 3\sqrt{11 - 3\sqrt{11 - ....\infty}}}}$ तो P + Q = ?

(a) $\sqrt{47}$ (b) $\sqrt{65}$

(c) $\sqrt{41}$ (d) $\sqrt{53}$

$P - Q = b = 3$

$P \times Q = a = 11$

$(P+Q)^2 = (P-Q)^2 + 4PQ$

ans $(P+Q)^2 = 9 + 4 \times 11$

$\therefore (P+Q)^2 = 53$

$P + Q = \sqrt{53}$

$$* \sqrt{a+b\sqrt{a-b\sqrt{a+b\sqrt{a..}}}} \; \infty = \frac{\sqrt{4a-3b^2}+b}{2}$$

$$* \sqrt{a-b\sqrt{a+b\sqrt{a-b\sqrt{a...}}}} \; \infty = \frac{\sqrt{4a-3b^2}-b}{2}$$

$$* \quad x = \sqrt{11 + 2\sqrt{11 - 2\sqrt{11 + 2\sqrt{11 \ldots \ldots \infty}}}} = ?$$

Sol[n]

$$\sqrt{\dfrac{4a - 3b^2} {}} + b$$
$$\dfrac{\sqrt{4a - 3b^2} + b}{2}$$

$$= \dfrac{\sqrt{44 - 12} + 2}{2}$$

$$= \dfrac{4\sqrt{2} + 2}{2}$$

$$= 2\sqrt{2} + 1 \; \Vert$$

$$* \quad y = \sqrt{4 + 3\sqrt{4 - 3\sqrt{7 + 3\sqrt{7\ldots\infty}}}} = ?$$

Ans $\dfrac{\sqrt{4a - 3b^2} + b}{2}$

$$= \dfrac{\sqrt{28 - 27} + 3}{2}$$

$$= \dfrac{\sqrt{1} + 3}{2} = \dfrac{1 + 3}{2} = 2$$

69. $\sqrt{7+2\sqrt{7-2\sqrt{7+2\sqrt{7-2\sqrt{7+....}}}}} = ?$

(a) $\sqrt{51}$

(b) 4

(c) $\dfrac{3+\sqrt{15}}{2}$

(d) 3 ✓

$$Ans = \frac{\sqrt{4a-3b^2}+b}{2}$$

$$= \frac{\sqrt{28-12}+2}{2} = \frac{\sqrt{16}+2}{2} = \frac{4+2}{2} = 3$$

Q. $x = \sqrt{6 - 2\sqrt{6 + 2\sqrt{6 - 2\sqrt{6 \ldots \infty}}}}$

Sol^n

$$x = \frac{\sqrt{4a - 3b^2} - b}{2}$$

$$= \frac{\sqrt{24 - 12} - 2}{2}$$

$$= \frac{2\sqrt{3} - 2}{2}$$

$$= \boxed{\sqrt{3} - 1}$$

$$a = 6 \qquad b = 1$$

Sol^n

$$\frac{\sqrt{4a - 3b^2} - b}{2}$$

$$= \frac{\sqrt{24 - 3} - 1}{2}$$

$$= \frac{\sqrt{21} - 1}{2}$$

70. Let $x = \sqrt{6 - 16 \cdot \sqrt{6 - \sqrt{6 + \ldots}}}$ to infinity ; then x equals

माना $x = \sqrt{6 - \sqrt{6 + \sqrt{6 - \sqrt{6 + \ldots}}}}$ से अनंत तक; तो x बराबर है

(a) 3

(b) $\sqrt{21}$

(c) $\dfrac{\sqrt{21} - 1}{2}$

(d) $\dfrac{\sqrt{21} + 1}{2}$

TYPE - 04

IF SQUARE ROOT IS INSIDE SQUARE ROOT

Type-1

Q. $x = \sqrt{8 + 2\sqrt{15}} = \sqrt{5} + \sqrt{3}$

Q. $y = \sqrt{11 + 2\sqrt{18}} = \sqrt{9} + \sqrt{2} = 3 + \sqrt{2}$

Q. $z = \sqrt{9 - 2\sqrt{14}} = \sqrt{7} - \sqrt{2}$

$$\left(\sqrt{30}+\sqrt{1}\right)-\left(\sqrt{30}-\sqrt{1}\right)$$

$$= \sqrt{30}+1-\sqrt{30}+1$$

$$= 2$$

71. If $x = \left(\sqrt{31+2\sqrt{30}}\right)-\left(\sqrt{31-2\sqrt{30}}\right)$, then what is the value of x ?

यदि $x = \sqrt{31+2\sqrt{30}}-\sqrt{31-2\sqrt{30}}$ तो x का मान क्या है?

CRPF HCM 22/02/2023 (Shift - 02)

(a) 2

(b) $2\sqrt{2}$

(c) $2\sqrt{15}$

(d) 4

1×30

Q. $x = \sqrt{16 + 2\sqrt{15}}$

Ans $\sqrt{15} + \sqrt{1}$

$= \sqrt{15} + 1$

$|Sx|$

Q. $x = \sqrt{8 + \sqrt{15}}$

Sol^n $x = \sqrt{\dfrac{16 + 2\sqrt{15}}{2}}$

$x = \dfrac{\sqrt{15} + \sqrt{1}}{\sqrt{2}}$

Q. $y = \sqrt{6 + \sqrt{27}}$

Sol^n $\sqrt{\dfrac{12 + 2\sqrt{27}}{2}}$

$= \dfrac{\sqrt{12 + 2\sqrt{27}}}{\sqrt{2}}$

$= \dfrac{\sqrt{9} + \sqrt{3}}{\sqrt{2}} = \dfrac{3 + \sqrt{3}}{\sqrt{2}}$

Q. $a = \sqrt{6 + \sqrt{20}}$

Ans $a = \sqrt{\dfrac{(6 + \sqrt{20}) \times 2}{(\ 1\ ) \times 2}}$

$= \sqrt{\dfrac{12 + 2\sqrt{20}}{2}} \qquad = \dfrac{\sqrt{10} + \sqrt{2}}{\sqrt{2}}$

Q. $x = \sqrt{14 + 6\sqrt{5}}$

Sol^n

$\sqrt{14 + 6\sqrt{5}}$

$= \sqrt{14 + 2 \times 3\sqrt{5}}$

$= \sqrt{14 + 2 \times \sqrt{9} \times \sqrt{5}}$

$= \sqrt{14 + 2 \times \sqrt{9 \times 5}}$

$= \sqrt{14 + 2\sqrt{45}}$

$= \sqrt{9} + \sqrt{5}$

$= 3 + \sqrt{5}$

Q. $x = \sqrt{14 + 6\sqrt{5}}$

Sol^n $\sqrt{14 + 6\sqrt{5}}$

$= \sqrt{14 + 2\sqrt{9 \times 5}}$

$= \sqrt{14 + 2\sqrt{45}}$

$= \sqrt{9} + \sqrt{5}$

$= 3 + \sqrt{5}$

72. The square root of $14 + 6\sqrt{5}$

$14 + 6\sqrt{5}$ का वर्गमूल है

(a) $2 + \sqrt{5}$

(b) $3 + \sqrt{5}$

(c) $5 + \sqrt{3}$

(d) $3 + 2\sqrt{5}$

73. What is the value of positive square root of 30 + $10\sqrt{5}$?

$30 + 10\sqrt{5}$ का धनात्मक वर्गमूल का मान क्या है?

(a) $2\sqrt{5} + 3$

(b) $4 + 2\sqrt{5}$

(c) $5 + \sqrt{5}$

(d) $6 + \sqrt{5}$

$$\text{ans} = \sqrt{30 + 10\sqrt{5}}$$

$$= \sqrt{30 + 2\sqrt{25 \times 5}}$$

$$= \sqrt{25} + \sqrt{5}$$

$$= 5 + \sqrt{5}$$

74. **What is the value of square root $14 + 8\sqrt{3}$?**

$14 + 8\sqrt{3}$ के वर्गमूल का मान क्या है?

(a) $\sqrt{6} - \sqrt{5}$

(b) $\sqrt{9} + \sqrt{5}$

(c) $\sqrt{7} + \sqrt{8}$

(d) $\sqrt{8} + \sqrt{6}$

$$ans = \sqrt{14 + 8\sqrt{3}}$$
$$= \sqrt{14 + 2\sqrt{16 \times 3}}$$
$$= \sqrt{14 + 2\sqrt{48}}$$
$$= \sqrt{8} + \sqrt{6}$$

$$A = \sqrt{41 + 24\sqrt{2}}$$

$$B = \sqrt{36 - 16\sqrt{2}}$$

$$= \sqrt{41 + 2\sqrt{144 \times 2}}$$

$$= \sqrt{36 - 2\sqrt{64 \times 2}}$$

$$= \sqrt{41 + 2\sqrt{288}}$$

$$= \sqrt{36 - 2\sqrt{128}}$$

$$= \left(\sqrt{32} + \sqrt{9}\right)$$

$$= \left(\sqrt{32} - \sqrt{4}\right)$$

75. If the positive square root of $41 + 24\sqrt{2}$ is A and positive square root of $36 - 16\sqrt{2}$ is B, then what is the value of A – B?

यदि $41 + 24\sqrt{2}$ का धनात्मक वर्गमूल **A** और $36 - 16\sqrt{2}$ का धनात्मक वर्गमूल **B** है, तो **A – B** का मान क्या है?

(a) 3

(b) 1

(c) 2

(d) 5

$$\text{ans} = \left(\sqrt{32} + 3\right) - \left(\sqrt{32} - 2\right)$$

$$= \sqrt{32} + 3 - \sqrt{32} + 2$$

$$= 5$$

I $\sqrt{5+2\sqrt{6}} = \sqrt{2} + \sqrt{3}$ ✓

II $\sqrt{15+2\sqrt{4\times14}} = \sqrt{15+2\sqrt{56}}$

$= \sqrt{8} + \sqrt{7}$

$\quad\quad\quad x \quad\quad y$

$x+y = 8+7 = 15$

$xy = 8\times7 = 56$

76. **Which of the following statement is correct?**
निम्नलिखित में से कौन सा कथन सही है?

I. The square root of $5 + 2\sqrt{6}$ is $\sqrt{2} + \sqrt{3}$ ✓
$5 + 2\sqrt{6}$ का वर्गमूल $\sqrt{2} + \sqrt{3}$ है।

~~II.~~ If $\sqrt{15 + 4\sqrt{14}} = \sqrt{x} + \sqrt{y}$, then $x + y = 15$ and $xy = 50$.

यदि $\sqrt{15 + 4\sqrt{14}} = \sqrt{x} + \sqrt{y}$, है, तो $x + y = 15$ तथा $xy = 50$ है।

(a) Neither I nor II
(b) Only I ✓
(c) Both I and II
(d) Only II

77. If $\sqrt{14 + a\sqrt{3}} = \sqrt{8} + \sqrt{6}$, then what is the value of a?

यदि $\sqrt{14 + a\sqrt{3}} = \sqrt{8} + \sqrt{6}$ है, तो a का मान क्या है?

(a) 4   (b) 6

(c) 5   (d) 8

$$\sqrt{14 + a\sqrt{3}} = \sqrt{8} + \sqrt{6}$$

$$= \sqrt{14 + 2\sqrt{48}}$$

$$= \sqrt{14 + (2 \times 4)\sqrt{3}}$$

$$\therefore a = 8$$

$$\sqrt{9 + 2\sqrt{14}} = \sqrt{7} + \sqrt{2}$$

77. If $\sqrt{14 + a\sqrt{3}} = \sqrt{8} + \sqrt{6}$, then what is the value of a?

यदि $\sqrt{14 + a\sqrt{3}} = \sqrt{8} + \sqrt{6}$ है, तो a का मान क्या है?

(a) 4

(b) 6

(c) 5

(d) 8

$$\left(\sqrt{14 + a\sqrt{3}}\right)^2 = \left(\sqrt{8} + \sqrt{6}\right)^2$$

$$14 + a\sqrt{3} = 8 + 6 + 2\sqrt{48}$$

$$a\sqrt{3} = 2 \times 4\sqrt{3}$$

$$a = 8$$

78. If $\sqrt{52 - 30\sqrt{3}} = a + b\sqrt{3}$, then $(a + b)$ is equal to:

यदि $\sqrt{52 - 30\sqrt{3}} = a + b\sqrt{3}$, तो $(a + b)$ बराबर है:

(a) 4

(b) −4

(c) −2 ✓

(d) 2

$$\sqrt{52 - 30\sqrt{3}}$$

$$= \sqrt{52 - 2\sqrt{225 \times 3}}$$

$$= \sqrt{52 - 2\sqrt{675}}$$

$$= \sqrt{27} - \sqrt{25}$$

$$= 3\sqrt{3} - 5$$

$$= \underbrace{b\sqrt{3}}_{} \quad \underbrace{a}_{}$$

$$\therefore a + b$$

$$-5 + 3 = -2$$

79. If $\sqrt{54 - 20\sqrt{2}} = a + b\sqrt{2}$, then $(2a + 3b)$ is equal to:

यदि $\sqrt{54 - 20\sqrt{2}} = a + b\sqrt{2}$, तो $(2a + 3b)$ बराबर है:

(a) 8

(b) 4

(c) −3

(d) 11

$$\sqrt{54 - 2\sqrt{100 \times 2}}$$

$$= \sqrt{54 - 2\sqrt{200}}$$

$$= \sqrt{50} - \sqrt{4}$$

$$= 5\sqrt{2} - 2$$

$b\sqrt{2}$ a

$$2a + 3b$$

$$= -4 + 15$$

$$= 11$$

80. If $\sqrt{43 - 24\sqrt{3}} = a + b\sqrt{3}$, then the value of (3a + 5b) is equal to which of the following?

अगर $\sqrt{43 - 24\sqrt{3}} = a + b\sqrt{3}$, हो, तो (3a + 5b) का मान निम्नलिखित में से किसके बराबर होगा?

(a) −8

(b) 3

(c) 12

(d) −11

H.W

$$a = \sqrt{6 - \sqrt{11}}$$

$$= \sqrt{\frac{12 - 2\sqrt{11}}{2}} = \frac{\sqrt{11} - 1}{\sqrt{2}}$$

81. If $a = \sqrt{6 - \sqrt{11}}$ and $b = \sqrt{6 + \sqrt{11}}$, then what is the value of $(b - a)$?

यदि $a = \sqrt{6 - \sqrt{11}}$ और $b = \sqrt{6 + \sqrt{11}}$ है, तो $(b - a)$ का मान क्या है?

(a) $\sqrt{6}$

(b) $\sqrt{2}$

(c) $\sqrt{22}$

(d) $\sqrt{3}$

$$\therefore \quad b - a$$

$$\left(\frac{\sqrt{11} + 1}{\sqrt{2}} \right) - \left(\frac{\sqrt{11} - 1}{\sqrt{2}} \right)$$

$$= \frac{\sqrt{11} + 1 - \sqrt{11} + 1}{\sqrt{2}} = \frac{2}{\sqrt{2}} \sqrt{2}$$

$$x = \frac{5\sqrt{3} - 4\sqrt{3} - 4\sqrt{2} + 5\sqrt{2}}{3 + \sqrt{6}}$$

$$= \frac{\sqrt{3} + \sqrt{2}}{\sqrt{3}(\sqrt{3} + \sqrt{2})} = \frac{1}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

$$y = \sqrt{7 - 2\sqrt{12}} = \sqrt{4} - \sqrt{3} = \boxed{2 - \sqrt{3}}$$

$$x - y = \frac{\sqrt{3}}{3} - (2 - \sqrt{3})$$

$$= \frac{\sqrt{3} - 6 + 3\sqrt{3}}{3} = \frac{4\sqrt{3} - 6}{3}$$

$$= \frac{4 \times 1.43 - 6}{3} = \frac{6.92 - 6}{3} = \frac{0.92}{3} = 0.3$$

82. If $x = \dfrac{5\sqrt{3} - \sqrt{48} - 4\sqrt{2} + \sqrt{50}}{3 + \sqrt{6}}$ and $y = \sqrt{7 - 4\sqrt{3}}$ then the value of $(x - y)$ is closest to:

यदि $x = \dfrac{5\sqrt{3} - \sqrt{48} - 4\sqrt{2} + \sqrt{50}}{3 + \sqrt{6}}$ और $y = \sqrt{7 - 4\sqrt{3}}$ तो $(x - y)$ का मान निकटतम है:

(a) 0.3

(b) 0.8

(c) 0.4

(d) 0.6

$$\sqrt{7 - 2\sqrt{12}}$$

$$\sqrt{48} = \sqrt{16 \times 3} = 4\sqrt{3}$$

$$\sqrt{50} = \sqrt{25 \times 2} = 5\sqrt{2}$$

$$x = \frac{5\sqrt{3}-4\sqrt{3}-4\sqrt{2}+5\sqrt{2}}{3+\sqrt{6}}$$

$$= \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}(\sqrt{3}+\sqrt{2})} = \frac{1}{\sqrt{3}} \times \sqrt{3} = \frac{\sqrt{3}}{3}$$

$$y = \sqrt{7-2\sqrt{12}} = \sqrt{4}-\sqrt{3} = \boxed{2-\sqrt{3}}$$

$$x-y = \frac{\sqrt{3}}{3} - (2-\sqrt{3})$$

$$= \frac{1.73}{3} - (2-1.73)$$

$$= 0.57 - 0.27$$

$$= 0.3$$

82. If $x = \dfrac{5\sqrt{3}-\sqrt{48}-4\sqrt{2}+\sqrt{50}}{3+\sqrt{6}}$ and $y = \sqrt{7-4\sqrt{3}}$ then the value of $(x-y)$ is closest to:

यदि $x = \dfrac{5\sqrt{3}-\sqrt{48}-4\sqrt{2}+\sqrt{50}}{3+\sqrt{6}}$ और $y = \sqrt{7-4\sqrt{3}}$ तो $(x-y)$ का मान निकटतम है:

$\sqrt{7-2\sqrt{12}}$

(a) 0.3
(b) 0.8
(c) 0.4
(d) 0.6

$$\sqrt{48} = \sqrt{16\times3} = 4\sqrt{3}$$
$$\sqrt{50} = \sqrt{25\times2} = 5\sqrt{2}$$

$$(a)^2 = (\sqrt{11+4\sqrt{6}})^2$$

$$a^2 = 11+4\sqrt{6}$$

$$\therefore \quad a^2 + \frac{1}{a^2} = 11+4\sqrt{6} + \frac{1}{11+4\sqrt{6}}$$

$$= 11+4\sqrt{6} + \frac{11-4\sqrt{6}}{25}$$

$$= \frac{275+100\sqrt{6}+11-4\sqrt{6}}{25}$$

$$= \frac{286+96\sqrt{6}}{25}$$

83. If $a = \sqrt{11+4\sqrt{6}}$, then what is the value of

$$\boxed{\frac{1+a^4}{a^2}?} = a^2 + \frac{1}{a^2}$$

यदि $a = \sqrt{11+4\sqrt{6}}$, है, तो $\dfrac{1+a^4}{a^2}$ का मान क्या है?

(a) $\dfrac{286+96\sqrt{6}}{25}$

(b) $\dfrac{186+95\sqrt{6}}{22}$

(c) $\dfrac{272+90\sqrt{6}}{21}$

(d) $\dfrac{95+98\sqrt{6}}{24}$

$$121 - 96$$

$$\frac{1}{3+\sqrt{2}} = \frac{3-\sqrt{2}}{9-2}$$

84. If $x = \sqrt{-\sqrt{3} + \sqrt{3 + 8\sqrt{7 + 4\sqrt{3}}}}$ where $x > 0$, then the value of x is equal to:

यदि $x = \sqrt{-\sqrt{3} + \sqrt{3 + 8\sqrt{7 + 4\sqrt{3}}}}$ जहाँ $x > 0$, तो x का मान इसके बराबर है:

(a) 3

(b) 4

(c) 1

(d) 2

$$x = \sqrt{-\sqrt{3} + \sqrt{3 + 8\sqrt{7 + 2\sqrt{12}}}}$$

$$= \sqrt{-\sqrt{3} + \sqrt{3 + 8\sqrt{(2 + \sqrt{3})}}} = \sqrt{-\sqrt{3} + \sqrt{3 + 16 + 8\sqrt{3}}}$$

$$= \sqrt{-\sqrt{3} + \sqrt{19 + 2\sqrt{48}}} = \sqrt{-\sqrt{3} + (\sqrt{16} + \sqrt{3})} = \sqrt{4} = 2$$

$$\sqrt{7 + 2\sqrt{12}} = \sqrt{4} + \sqrt{3}$$

$$x = \sqrt{10 + 2(\sqrt{6} + \sqrt{10} + \sqrt{15})}$$

$$\therefore x^2 = 10 + 2(\sqrt{6} + \sqrt{10} + \sqrt{15})$$

85. Evaluate $\sqrt{10 + 2\sqrt{6} + 2\sqrt{10} + 2\sqrt{15}}$

मूल्यांकन करे $\sqrt{10 + 2\sqrt{6} + 2\sqrt{10} + 2\sqrt{15}}$

(a) $\sqrt{2} + \sqrt{3}$

(b) $\sqrt{3} + \sqrt{5}$

(c) $(\sqrt{2} + \sqrt{3} + \sqrt{5})^2$

(d) $\sqrt{3} + \sqrt{5} + \sqrt{7}$

$$2 + 3 + 5 + 2(\sqrt{6} + \sqrt{15} + \sqrt{10})$$

$$(a+b+c)^2 = a^2 + b^2 + c^2 + 2(ab + bc + ac)$$

86. What is the value

$$x = \frac{\sqrt[3]{(26 + 15\sqrt{3})} + \sqrt[3]{(26 - 15\sqrt{3})}}{\sqrt[3]{(26 + 15\sqrt{3})} + \sqrt[3]{(26 - 15\sqrt{3})}} = ?$$

का मान क्या है?

(a) 6   (b) 5
(c) 4 ✓   (d) 3

$$(x)^3 = \left(\underbrace{\sqrt[3]{26 + 15\sqrt{3}}}_{a} + \underbrace{\sqrt[3]{26 - 15\sqrt{3}}}_{b} \right)^3$$

$$\Rightarrow x^3 = 26 + 15\sqrt{3} + 26 - 15\sqrt{3} + 3\sqrt[3]{(26)^2 - (15\sqrt{3})^2} \, x$$

$$\Rightarrow x^3 = 52 + 3\sqrt[3]{676 - 675} \times x$$

$$\Rightarrow \boxed{x^3 = 52 + 3x}$$

$$(a+b)^3 = a^3 + b^3 + 3ab(a+b)$$

put option

(a) 216 $52 + 18 = 70$ ✗

(c) 64 $52 + 12 = 64$ ✓

TYPE - 05

IF SQUARE ROOT IS IN THE DENOMINATOR

$$\sqrt{\dfrac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}} \times \dfrac{(\sqrt{3}+\sqrt{2})}{(\sqrt{3}+\sqrt{2})}}$$

$$=\sqrt{\dfrac{(\sqrt{3}+\sqrt{2})^2}{(\sqrt{3})^2-(\sqrt{2})^2}} = \sqrt{\dfrac{(\sqrt{3}+\sqrt{2})^2}{3-2}}$$

$$=\dfrac{\sqrt{3}+\sqrt{2}}{1}$$

87. The square root of $\dfrac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ is

$\dfrac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ का वर्गमूल है

(a) $\sqrt{3}+\sqrt{2}$

(b) $\sqrt{3}-\sqrt{2}$

(c) $2\sqrt{2}+\sqrt{3}$

(d) $\sqrt{2}-\sqrt{3}$

$$2 + \frac{6}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} + \frac{2-\sqrt{3}}{4-3} + \frac{\sqrt{3}+2}{3-4}$$

$$= 2 + \frac{\overset{2}{\cancel{6}\sqrt{3}}}{\cancel{3}} + 2-\sqrt{3} + \frac{\sqrt{3}+2}{-1}$$

$$= 2 + 2\sqrt{3} + 2 - \sqrt{3} - \sqrt{3} - 2$$

$$= 2$$

88. $2 + \dfrac{6}{\sqrt{3}} + \dfrac{1}{2+\sqrt{3}} + \dfrac{1}{\sqrt{3}-2}$ equals to

$2 + \dfrac{6}{\sqrt{3}} + \dfrac{1}{2+\sqrt{3}} + \dfrac{1}{\sqrt{3}-2}$ बराबर है

(a) $(2-\sqrt{3})$ (b) $-(2+\sqrt{3})$

(c) 1   (d) 2

$$\frac{1}{2+\sqrt{3}} = \frac{2-\sqrt{3}}{(2)^2-(\sqrt{3})^2} = \frac{2-\sqrt{3}}{4-3} = 2-\sqrt{3}$$

$$\frac{3\sqrt{2}(\sqrt{6}-\sqrt{3})}{3} - \frac{2\sqrt{6}(\sqrt{3}-1)}{2} + \frac{2\sqrt{3}(\sqrt{6}-2)}{2}$$

$$= \sqrt{12} - \sqrt{6} - \sqrt{18} + \sqrt{6} + \sqrt{18} - 2\sqrt{3}$$

$$= 2\sqrt{3} - 2\sqrt{3}$$

$$= 0$$

89. $\dfrac{3\sqrt{2}}{\sqrt{6}+\sqrt{3}} - \dfrac{2\sqrt{6}}{\sqrt{3}+1} + \dfrac{2\sqrt{3}}{\sqrt{6}+2}$ is equal to

$\dfrac{3\sqrt{2}}{\sqrt{6}+\sqrt{3}} - \dfrac{2\sqrt{6}}{\sqrt{3}+1} + \dfrac{2\sqrt{3}}{\sqrt{6}+2}$ के बराबर है

(a) 3

(b) 2

(c) 0

(d) $\sqrt{3}$

$$\sqrt{12} = \sqrt{4 \times 3}$$
$$= 2\sqrt{3}$$

$$\frac{6\,(5-4\sqrt{3})}{25-48}$$

$$= \frac{6\,(5-4\sqrt{3})}{-23} = \frac{\cancel{-}6\,(4\sqrt{3}-5)}{\cancel{+}23}$$

$$= \frac{24\sqrt{3}-30}{23}$$

90. What is the simplified value of $\dfrac{6}{5+4\sqrt{3}}$?

$\dfrac{6}{5+4\sqrt{3}}$ का सरलीकृत मान क्या है?

(a) $\dfrac{24\sqrt{3}-30}{23}$

(b) $\dfrac{13\sqrt{3}-15}{27}$

(c) $\dfrac{24\sqrt{5}-25}{25}$

(d) $\dfrac{15\sqrt{3}-24}{23}$

$\sqrt{3}=1.732$

91. The value of $\dfrac{1}{\sqrt{2}+1}+\dfrac{1}{\sqrt{3}+\sqrt{2}}+\dfrac{1}{\sqrt{4}+\sqrt{3}}+....+$

$\dfrac{1}{\sqrt{100}+\sqrt{99}}$ is

$\dfrac{1}{\sqrt{2}+1}+\dfrac{1}{\sqrt{3}+\sqrt{2}}+\dfrac{1}{\sqrt{4}+\sqrt{3}}+\dfrac{1}{\sqrt{99}+\sqrt{98}}+\dfrac{1}{\sqrt{100}+\sqrt{99}}$ का मान है

(a) 1   (b) 9

(c) $\sqrt{99}$ (d) $\sqrt{99}-1$

$\dfrac{(\sqrt{2}-1)}{1}+\dfrac{(\sqrt{3}-\sqrt{2})}{1}+\dfrac{\sqrt{4}-\sqrt{3}}{1}+....+\dfrac{\sqrt{99}-\sqrt{98}}{1}$

$+\dfrac{\sqrt{100}-\sqrt{99}}{1}$

$=\sqrt{2}-1+\sqrt{3}-\sqrt{2}+\sqrt{4}-\sqrt{3}+.....+\sqrt{99}-\sqrt{98}+\sqrt{100}-\sqrt{99}$

$=\sqrt{100}-1$

$=10-1$

$=9$

91. The value of $\dfrac{1}{\sqrt{2}+1} + \dfrac{1}{\sqrt{3}+\sqrt{2}} + \dfrac{1}{\sqrt{4}+\sqrt{3}} + \ldots +$

$\dfrac{1}{\sqrt{100}+\sqrt{99}}$ is

$\dfrac{1}{\sqrt{2}+1} + \dfrac{1}{\sqrt{3}+\sqrt{2}} + \dfrac{1}{\sqrt{4}+\sqrt{3}} + \ldots + \dfrac{1}{\sqrt{100}+\sqrt{99}}$ का

मान है

(a) 1

(b) 9

(c) $\sqrt{99}$

(d) $\sqrt{99}-1$

$\dfrac{\sqrt{2}-1}{1} + \dfrac{\sqrt{3}-\sqrt{2}}{1} + \ldots \ldots + \dfrac{\sqrt{100}-\sqrt{99}}{1}$

$Ans = \sqrt{100} - 1$

$= 10 - 1$

$= 9$

$$\frac{1}{\sqrt{4}+\sqrt{3}} + \frac{1}{\sqrt{5}+\sqrt{4}} + \frac{1}{\sqrt{6}+\sqrt{5}} + \frac{1}{\sqrt{7}+\sqrt{6}}$$

$$= \sqrt{4}-\sqrt{3}+\sqrt{5}-\sqrt{4}+\sqrt{6}-\sqrt{5}+\sqrt{7}-\sqrt{6}$$

$$= \sqrt{7}-\sqrt{3}$$

92. What is the value of

$$\frac{1}{\sqrt{3}+\sqrt{4}} + \frac{1}{\sqrt{4}+\sqrt{5}} + \frac{1}{\sqrt{5}+\sqrt{6}} + \frac{1}{\sqrt{6}+\sqrt{7}} ?$$

$$\frac{1}{\sqrt{3}+\sqrt{4}} + \frac{1}{\sqrt{4}+\sqrt{5}} + \frac{1}{\sqrt{5}+\sqrt{6}} + \frac{1}{\sqrt{6}+\sqrt{7}}$$ का   मान

क्या है?

(a) $\sqrt{3}-\sqrt{7}$

(b) $\sqrt{6}-\sqrt{5}$

(c) $\sqrt{7}-\sqrt{3}$

(d) $\sqrt{8}-\sqrt{5}$
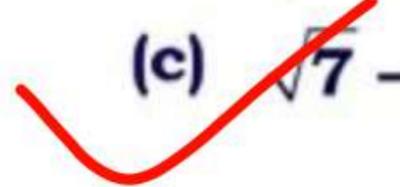
93. The value of

$$\frac{1}{1+\sqrt{2}}+\frac{1}{\sqrt{2}+\sqrt{3}}+\frac{1}{\sqrt{3}+\sqrt{4}}+....\frac{1}{\sqrt{8}+\sqrt{9}}$$ is

का मान है

(a) 1

(b) 0

(c) 2

(d) $\sqrt{2}$

$$\frac{1}{\sqrt{2}+1}+\frac{1}{\sqrt{3}+\sqrt{2}}+-\ \ldots\ldots+\frac{1}{\sqrt{9}+\sqrt{8}}$$

$$=\sqrt{2}-1+\sqrt{3}-\sqrt{2}+---+\sqrt{9}-\sqrt{8}$$

$$=\sqrt{9}-1$$

$$=3-1$$

$$=2$$

94. The value of $\dfrac{1}{\sqrt{3.25}+\sqrt{2.25}} + \dfrac{1}{\sqrt{4.25}+\sqrt{3.25}}$

$+ \dfrac{1}{\sqrt{5.25}+\sqrt{4.25}} + \dfrac{1}{\sqrt{6.25}+\sqrt{5.25}}$ is

का मान है

(a) 1.00
(b) 1.25
(c) 1.50
(d) 2.25

$= \sqrt{3.25} - \sqrt{2.25} + \sqrt{4.25} - \sqrt{3.25} + \sqrt{5.25} - \sqrt{4.25} + \sqrt{6.25} - \sqrt{5.25}$

$= \sqrt{6.25} - \sqrt{2.25}$

$= 2.5 - 1.5$

$= \boxed{1}$

95. Simplify $\dfrac{1}{\sqrt{100}-\sqrt{99}} - \dfrac{1}{\sqrt{99}-\sqrt{98}} + \dfrac{1}{\sqrt{98}-\sqrt{97}} - \dfrac{1}{\sqrt{97}-\sqrt{96}} + \dots + \dfrac{1}{\sqrt{2}-\sqrt{1}}$

सरल कीजिए।

(a) 0

(b) 9

(c) 10

(d) 11

$+ \dfrac{(\sqrt{100}+\sqrt{99})}{1} - \dfrac{(\sqrt{99}+\sqrt{98})}{1} - \dots + \dfrac{\sqrt{2}+1}{1}$

$= \sqrt{100}+\sqrt{99}-\sqrt{99}-\sqrt{98}\dots + \sqrt{2}+1$

$= \sqrt{100}+1$

$= 10+1$

$= 11$

96. The value of

$$\left(\frac{4+\sqrt{15}}{1}\right) - \frac{(\sqrt{15}+\sqrt{14})}{1} + \ldots - \frac{(3+\sqrt{8})}{1} + \frac{1}{4-\sqrt{15}} - \frac{1}{\sqrt{15}-\sqrt{14}} + \frac{1}{\sqrt{14}-\sqrt{13}} - \frac{1}{\sqrt{13}-\sqrt{12}} +$$

$$\frac{1}{\sqrt{12}-\sqrt{11}} - \frac{1}{\sqrt{11}-\sqrt{10}} + \frac{1}{\sqrt{10}-3} - \frac{1}{3-\sqrt{8}} \text{ is:}$$

$$\frac{1}{4-\sqrt{15}} - \frac{1}{\sqrt{15}-\sqrt{14}} + \frac{1}{\sqrt{14}-\sqrt{13}} - \frac{1}{\sqrt{13}-\sqrt{12}} +$$

$$\frac{1}{\sqrt{12}-\sqrt{11}} - \frac{1}{\sqrt{11}-\sqrt{10}} + \frac{1}{\sqrt{10}-3} - \frac{1}{3-\sqrt{8}} \quad \text{का}$$

मान ज्ञात करें।

$$= \quad 4+\sqrt{15}-\sqrt{15}-\sqrt{14}+ \ldots -3-\sqrt{8}$$

$$= \quad 4 - \sqrt{8}$$

$$= \quad 4 - 2\sqrt{2}$$

(a) $2 + 2\sqrt{2}$

(b) $2 - 2\sqrt{2}$

(c) $4 - 2\sqrt{2}$

(d) $4 + 2\sqrt{2}$

$a = 1 \qquad b = \dfrac{21}{2}$

$\therefore \ 15a - 2b$

$= 15 - 21$

$= -6$

97. $\dfrac{8\sqrt{5}}{\sqrt{10}-\sqrt{2}} - \dfrac{5\sqrt{2}}{\sqrt{10}-\sqrt{5}} - \dfrac{3\sqrt{10}}{\sqrt{2}-\sqrt{5}} + \dfrac{1}{2-\sqrt{2}} = a + b\sqrt{2}$

then $\boxed{(15a - 2b)}$ value is equal to

यदि $\dfrac{8\sqrt{5}}{\sqrt{10}-\sqrt{2}} - \dfrac{5\sqrt{2}}{\sqrt{10}-\sqrt{5}} - \dfrac{3\sqrt{10}}{\sqrt{2}-\sqrt{5}} + \dfrac{1}{2-\sqrt{2}} = a$

$+ b\sqrt{2}$ है, तो $(15a - 2b)$ का मान बताइएं।

(a) 3

(b) –6

(c) 6

(d) –3

$\dfrac{8\sqrt{5}(\sqrt{10}+\sqrt{2})}{8} - \dfrac{5\sqrt{2}(\sqrt{10}+\sqrt{5})}{5} + \dfrac{3\sqrt{10}(\sqrt{2}+\sqrt{5})}{3} + \dfrac{2+\sqrt{2}}{2} = a + b\sqrt{2}$

$\Rightarrow \sqrt{50} + \sqrt{10} - \sqrt{20} - \sqrt{10} + \sqrt{20} + \sqrt{50} + \dfrac{2+\sqrt{2}}{2} = a + b\sqrt{2}$

$\Rightarrow 10\sqrt{2} + 1 + \dfrac{\sqrt{2}}{2} = a + b\sqrt{2}$

$\Rightarrow 1 + \dfrac{21\sqrt{2}}{2} = a + b\sqrt{2}$

$$\left(\frac{\sqrt{7}+\sqrt{5}}{\sqrt{7}-\sqrt{5}}\right) \times \frac{\sqrt{14}-\sqrt{10}}{\sqrt{14}+\sqrt{10}} + \frac{\sqrt{10}}{\sqrt{5}}$$

$$= \left(\frac{\sqrt{7}+\sqrt{5}}{\sqrt{7}-\sqrt{5}}\right) \times \frac{\sqrt{2}}{\sqrt{2}}\left(\frac{\sqrt{7}-\sqrt{5}}{\sqrt{7}+\sqrt{5}}\right) + \frac{\sqrt{5}\times\sqrt{2}}{\sqrt{5}}$$

$$= 1 + \sqrt{2}$$

98. What is the value of $\dfrac{\sqrt{7}+\sqrt{5}}{\sqrt{7}-\sqrt{5}} \div \dfrac{\sqrt{14}+\sqrt{10}}{\sqrt{14}-\sqrt{10}} + \dfrac{\sqrt{10}}{\sqrt{5}}$?

$\dfrac{\sqrt{7}+\sqrt{5}}{\sqrt{7}-\sqrt{5}} \div \dfrac{\sqrt{14}+\sqrt{10}}{\sqrt{14}-\sqrt{10}} + \dfrac{\sqrt{10}}{\sqrt{5}}$ का मान क्या है?

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(a) $\sqrt{2}+1$

(b) $2\sqrt{2}+2$

(c) $\sqrt{2}+2$

(d) $2\sqrt{2}+1$

99. $\dfrac{1}{\sqrt{11-2\sqrt{30}}} - \dfrac{3}{\sqrt{7-2\sqrt{10}}} - \dfrac{4}{\sqrt{8+4\sqrt{3}}}$

$\curvearrowright \sqrt{8+2\sqrt{12}}$

(a) 0   (b) 1

(c) $\sqrt{2}$ (d) $\sqrt{5}$

$$\dfrac{1}{\sqrt{6}-\sqrt{5}} - \dfrac{3}{\sqrt{5}-\sqrt{2}} - \dfrac{4}{\sqrt{6}+\sqrt{2}}$$

$$= \left(\dfrac{\sqrt{6}+\sqrt{5}}{1}\right) - \dfrac{\cancel{3}(\sqrt{5}+\sqrt{2})}{\cancel{3}} - \dfrac{\cancel{4}(\sqrt{6}-\sqrt{2})}{\cancel{4}}$$

$$= \cancel{\sqrt{6}} + \cancel{\sqrt{5}} - \cancel{\sqrt{5}} - \cancel{\sqrt{2}} - \cancel{\sqrt{6}} + \cancel{\sqrt{2}}$$

$$= 0$$

.

$$\frac{1}{\sqrt{12-\sqrt{4\times35}}} - \frac{1}{\sqrt{8-\sqrt{4\times15}}} - \frac{2}{\sqrt{10+\sqrt{4\times21}}}$$

$$= \frac{1}{\sqrt{12-2\sqrt{35}}} - \frac{1}{\sqrt{8-2\sqrt{15}}} - \frac{2}{\sqrt{10+2\sqrt{21}}}$$

$$= \frac{1}{\sqrt{7}-\sqrt{5}} - \frac{1}{\sqrt{5}-\sqrt{3}} - \frac{2}{\sqrt{7}+\sqrt{3}}$$

$$= \frac{(\sqrt{7}+\sqrt{5})}{2} - \frac{(\sqrt{5}+\sqrt{3})}{2} - \frac{\cancel{2}(\sqrt{7}-\sqrt{3})}{\cancel{4}\,2}$$

$$= \frac{\cancel{\sqrt{7}}+\cancel{\sqrt{5}}-\cancel{\sqrt{5}}-\cancel{\sqrt{3}}-\cancel{\sqrt{7}}+\cancel{\sqrt{3}}}{2} = \frac{0}{2} = 0$$

100. The value of

$$\frac{1}{\sqrt{(12-\sqrt{140})}} - \frac{1}{\sqrt{(8-\sqrt{60})}} - \frac{2}{\sqrt{10+\sqrt{84}}}$$

$$\frac{1}{\sqrt{(12-\sqrt{140})}} - \frac{1}{\sqrt{(8-\sqrt{60})}} - \frac{2}{\sqrt{10+\sqrt{84}}}$$ का मान है

(a) 0

(b) 1

(c) 2

(d) 3

$$\dfrac{\sqrt{x}}{\sqrt{32 - 2x} - \sqrt{21}} \text{ is:}$$

यदि $x = 5 - \sqrt{21}$ तो $\dfrac{\sqrt{x}}{\sqrt{32 - 2x} - \sqrt{21}}$ का मान है:

(a) $\dfrac{1}{\sqrt{2}}(\sqrt{3} - \sqrt{7})$

(b) $\dfrac{1}{\sqrt{2}}(\sqrt{7} - \sqrt{3})$

(c) $\dfrac{1}{\sqrt{2}}(\sqrt{3} - \sqrt{7})$

(d) $\dfrac{1}{\sqrt{2}}(7 - \sqrt{3})$

$$\dfrac{\sqrt{5 - \sqrt{21}}}{\sqrt{32 - 2(5 - \sqrt{21})} - \sqrt{21}}$$

$$= \dfrac{\sqrt{5 - \sqrt{21}}}{\sqrt{22 + 2\sqrt{21}} - \sqrt{21}} = \dfrac{\sqrt{\dfrac{10 - 2\sqrt{21}}{2}}}{\sqrt{22 + 2\sqrt{21}} - \sqrt{21}}$$

$$= \dfrac{\dfrac{\sqrt{7} - \sqrt{3}}{\sqrt{2}}}{\sqrt{21} + 1 - \sqrt{21}} = \dfrac{\sqrt{7} - \sqrt{3}}{\sqrt{2}}$$

$$\frac{(\sqrt{3}+\sqrt{2})-(\sqrt{3}-\sqrt{2})}{12\sqrt{6}+48-30-20\sqrt{6}}$$

$$= \frac{\sqrt{3}+\sqrt{2}-\sqrt{3}+\sqrt{2}}{18-8\sqrt{6}} = \frac{2\sqrt{2}}{2(9-4\sqrt{6})}$$

$$= \frac{\sqrt{2}\,(9+4\sqrt{6})}{-15} = \frac{9\sqrt{2}+4\sqrt{12}}{-15}$$

$$\Rightarrow -\frac{9\sqrt{2}}{15}-\frac{8}{15}\sqrt{3} = a\sqrt{2}+b\sqrt{3}$$

$$\boxed{a=-\frac{9}{15}} \qquad \boxed{b=-\frac{8}{15}}$$

$$-\frac{9}{15}+\frac{8}{15} = \frac{-1}{15}$$

$$4\sqrt{12} = 4\sqrt{4\times3} = 4\times2\sqrt{3} = 8\sqrt{3}$$

102. If $\dfrac{\sqrt{5+2\sqrt{6}}-\sqrt{5-2\sqrt{6}}}{(4\sqrt{3}-5\sqrt{2})\times(3\sqrt{2}+4\sqrt{3})} = a\sqrt{2}+b\sqrt{3}$, **then the value of (a − b) is:**

यदि $\left\{\dfrac{\sqrt{5+2\sqrt{6}}-\sqrt{5-2\sqrt{6}}}{(4\sqrt{3}-5\sqrt{2})\times(3\sqrt{2}+4\sqrt{3})}\right\} = a\sqrt{2}+b\sqrt{3}$, तो (a − b) का मान है:

(a) $\dfrac{1}{3}$

(b) $-\dfrac{1}{15}$

(c) $\dfrac{1}{15}$

(d) $\dfrac{1}{3}$

$$\frac{\sqrt{26-\sqrt{49\times3}}}{\sqrt{14+\sqrt{25\times3}}} = \frac{\sqrt{52-2\sqrt{147}}}{\sqrt{28+2\sqrt{75}}}$$

$b=19 \quad a=-6$

$\sqrt{19-(-6)}$

$=\sqrt{19+6}$

$= 5$

$$= \frac{\sqrt{49}-\sqrt{3}}{\sqrt{25}+\sqrt{3}}$$

$$= \frac{(7-\sqrt{3})}{(5+\sqrt{3})}\frac{(5-\sqrt{3})}{(5-\sqrt{3})}$$

$$= \frac{35-7\sqrt{3}-5\sqrt{3}+3}{25-3} = \frac{38-12\sqrt{3}}{22} = \boxed{\frac{19-6\sqrt{3}}{11}} = \frac{b+a\sqrt{3}}{11}$$

103. If $\dfrac{\sqrt{26-7\sqrt{3}}}{\sqrt{14+5\sqrt{3}}} = \dfrac{b+a\sqrt{3}}{11}$ $b > 0$, **then what is the value of** $\sqrt{(b-a)}$ **?**

यदि $\dfrac{\sqrt{26-7\sqrt{3}}}{\sqrt{14+5\sqrt{3}}} = \dfrac{b+a\sqrt{3}}{11}$ $b > 0$ हो, तो $\sqrt{(b-a)}$ का मान कितना होगा?

(a) 5

(b) 25

(c) 12

(d) 9

104. $\dfrac{\sqrt{38-5\sqrt{3}}}{\sqrt{26+7\sqrt{3}}}=\dfrac{a+b\sqrt{3}}{23}$, $b > 0$, then the value of

H.W

$(b - a)$ is:

यदि $\dfrac{\sqrt{38-5\sqrt{3}}}{\sqrt{26+7\sqrt{3}}}=\dfrac{a+b\sqrt{3}}{23}$, $b > 0$ है, तो $(b - a)$ का मान कितना होगा?

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(a) 7

(b) 18

(c) 29

(d) 11

105. The value of $5\sqrt{3} + 7\sqrt{2} - \sqrt{6} - \dfrac{23}{\sqrt{2} + \sqrt{3} + \sqrt{6}}$ is:

$5\sqrt{3} + 7\sqrt{2} - \sqrt{6} - \dfrac{23}{\sqrt{2} + \sqrt{3} + \sqrt{6}}$ is: का मान ज्ञात कीजिए।

(a) 15
(b) 16
(c) 12
(d) 10

$$5 \times 1.732 + 7 \times 1.414 - 2.44 - \frac{23}{1.414 + 1.732 + 2.44}$$

$$= 8.660 + 9.898 - 2.44 - \frac{23000}{5.586}$$

$$= 16.118 - 4.11$$

$$= 12.00 \sim$$

$\sqrt{2} = 1.414$

$\sqrt{3} = 1.732$

$\sqrt{6} = 2.440$

$$\frac{2.440}{5.586}$$

$$\frac{\sqrt{2}-\sqrt{3}-\sqrt{5}+\sqrt{2}+\sqrt{3}-\sqrt{5}}{(\sqrt{2}+\sqrt{3}-\sqrt{5})(\sqrt{2}-\sqrt{3}-\sqrt{5})}$$

$$=\frac{2\sqrt{2}-2\sqrt{5}}{\{(\sqrt{2}-\sqrt{5})+\sqrt{3}\}\{(\sqrt{2}-\sqrt{5})-\sqrt{3}\}}$$

$$=\frac{2(\sqrt{2}-\sqrt{5})}{(\sqrt{2}-\sqrt{5})^2-(\sqrt{3})^2}=\frac{2(\sqrt{2}-\sqrt{5})}{(2+5-2\sqrt{10}-3)}=\frac{2(\sqrt{2}-\sqrt{5})}{(4-2\sqrt{10})}=\frac{2(\sqrt{2}-\sqrt{5})}{2(2-\sqrt{10})}$$

$$=\frac{1}{\sqrt{2}}\frac{\sqrt{2}-\sqrt{5}}{(\sqrt{2}-\sqrt{5})}$$

106. $\left[\dfrac{1}{\sqrt{2}+\sqrt{3}-\sqrt{5}}+\dfrac{1}{\sqrt{2}-\sqrt{3}-\sqrt{5}}\right]$ in simplified form equals

सरलीकृत रूप से $\left[\dfrac{1}{\sqrt{2}+\sqrt{3}-\sqrt{5}}+\dfrac{1}{\sqrt{2}-\sqrt{3}-\sqrt{5}}\right]$ के बराबर है

(a) 1

(b) $\sqrt{2}$

(c) $\dfrac{1}{\sqrt{2}}$ ✓

(d) 0

$$\frac{\sqrt{3}\ \cancel{\sqrt{6}}}{\sqrt{2}+\sqrt{3}} \times \frac{1}{\cancel{\sqrt{2}}} = a+b\sqrt{6}$$

$$= \frac{\sqrt{3}}{(\sqrt{3}+\sqrt{2})} \times \frac{(\sqrt{3}-\sqrt{2})}{(\sqrt{3}-\sqrt{2})}$$

$$= \frac{3-\sqrt{6}}{3-2} = \frac{3-\sqrt{6}}{1} = a+b\sqrt{6}$$

$$a=3 \quad b=-1$$

$$\therefore \ 4\times3 - 3(-1)$$

$$= 12+3$$

$$= 15$$

107. If $\dfrac{\sqrt{6}}{\sqrt{2}+\sqrt{3}} \times \left(\dfrac{1}{\sqrt{2}+\sqrt{3}-\sqrt{5}} + \dfrac{1}{\sqrt{2}-\sqrt{3}-\sqrt{5}}\right) = a$ $+ b\sqrt{6}$ where a and b are positive integers, then what will be te value of (4a – 3b)?

यदि $\dfrac{\sqrt{6}}{\sqrt{2}+\sqrt{3}} \times \left(\dfrac{1}{\sqrt{2}+\sqrt{3}-\sqrt{5}} + \dfrac{1}{\sqrt{2}-\sqrt{3}-\sqrt{5}}\right) = a$ $+ b\sqrt{6}$ जहाँ a और b पाजिटिव पूर्णांकों (इंटीजर) हैं, तो (4a – 3b) का मूल्य क्या होगा?

(a) 18
(b) 15
(c) 10
(d) 12

$$\frac{1.414+1.732+2}{1.414+1.732+2.440+2.828+4}$$

$$= \frac{5.146}{12.414} = 0.41$$

108. Solve $\dfrac{\sqrt{2}+\sqrt{3}+\sqrt{4}}{\sqrt{2}+\sqrt{3}+\sqrt{6}+\sqrt{8}+\sqrt{16}}$?

$$\frac{\sqrt{2}+\sqrt{3}+\sqrt{4}}{\sqrt{2}+\sqrt{3}+\sqrt{6}+\boxed{\sqrt{8}}+\sqrt{16}}$$ को हल कीजिए?

$2\sqrt{2}$

1.414 (a) $\sqrt{2}$

(b) $\sqrt{2}-1$ 0.414

0.44 (c) $\dfrac{\sqrt{2}}{3}$

(d) $3-\sqrt{2}$ 1.586

$\sqrt{2}=1.414$
$\sqrt{3}=1.732$
$\sqrt{5}=2.236$
$\sqrt{6}=2.44$
$\sqrt{4}=2$

$$\frac{15\sqrt{5}(\sqrt{2}+1)}{\sqrt{5}(\sqrt{2}+\sqrt{4}+\sqrt{8}-1-\sqrt{16})}$$

$$=\frac{15(\sqrt{2}+1)}{(\sqrt{2}+2+2\sqrt{2}-1-4)}$$

$$=\frac{15(\sqrt{2}+1)}{-3+3\sqrt{2}}=\frac{15(\sqrt{2}+1)}{3(\sqrt{2}-1)}$$

$$=\frac{5(\sqrt{2}+1)}{(\sqrt{2}-1)}\times\frac{(\sqrt{2}+1)}{(\sqrt{2}+1)}=\frac{5(\sqrt{2}+1)^2}{2-1}=5(2+1+2\sqrt{2})$$

109. The expression

$$\left\{\frac{15(\sqrt{10}+\sqrt{5})}{\sqrt{10}+\sqrt{20}+\sqrt{40}-\sqrt{5}-\sqrt{80}}\right\}\text{is equal to:}$$

व्यंजक $\dfrac{15(\sqrt{10}+\sqrt{5})}{\sqrt{10}+\sqrt{20}+\sqrt{40}-\sqrt{5}-\sqrt{80}}$ के बराबर है

(a) $10(3+2\sqrt{5})$

(b) $5+2\sqrt{2}$

(c) $5(3+2\sqrt{2})$

(d) $5-2\sqrt{5}$

$$\sqrt[r]{\left(\sqrt[s]{\left(\sqrt[p]{x^a}\right)^b}\right)^c} = x^{\frac{a \times b \times c}{p \times q \times r}}$$

110. Simplified from of $\left[\left(\sqrt[5]{x^{-3/5}}\right)^{-5/3}\right]^5$ is

$$ans = x^{\dfrac{-\frac{3}{5} \times \left(-\frac{5}{3}\right) \times 5}{5}}$$

$$= x^1$$

$\left[\left(\sqrt[5]{x^{-3/5}}\right)^{-5/3}\right]^5$ से सरलीकृत है

(a) x^5

(b) x^{-5}

(c) x ✓

(d) $\dfrac{1}{x}$

$$\sqrt{a} = a^{\frac{1}{2}}$$

$$\sqrt[3]{a} = a^{\frac{1}{3}}$$

$$\sqrt[4]{a} = a^{\frac{1}{4}}$$

$$8 - \left[\frac{4^{9/4} \sqrt[3]{2^3}}{2\sqrt{2^{-2}}} \right]^{1/2}$$

$$= 8 - \left[\frac{(2^2)^{\frac{9}{4} \times 2} \times 2^{3 \times \frac{1}{2}}}{2 \times 2^{-2 \times \frac{1}{2}}} \right]^{\frac{1}{2}}$$

$$= 8 - \left[\frac{2^{\frac{9}{2}} \times 2^{\frac{3}{2}}}{2 \times 2^{-1}} \right]^{\frac{1}{2}}$$

$$= 8 - \left[\frac{2^{\frac{9}{2} + \frac{3}{2}}}{2^{1 + (-1)}} \right]^{\frac{1}{2}} = 8 - \left(\frac{2^6}{2^0} \right)^{\frac{1}{2}}$$

$$= 8 - \frac{2^3}{1} = 8 - 8 = 0$$

111. $\left\{ 8 - \left[\dfrac{4^{9/4} \sqrt{2 \times 2^2}}{2\sqrt{2^{-2}}} \right]^{1/2} \right\}$

$\left\{ 8 - \left[\dfrac{4^{9/4} \sqrt{2 \times 2^2}}{2\sqrt{2^{-2}}} \right]^{1/2} \right\}$

(a) 32
(b) 8
(c) 1
(d) 0

$a^m \times a^n = a^{m+n}$

$$A = 243^{0.20}$$

$$= 243^{\frac{020}{1005}}$$

$$= 243^{\frac{1}{5}}$$

$$= 3^{5 \times \frac{1}{5}}$$

$$= 3$$

$$B = \left(\frac{1}{216}\right)^{-\frac{2}{3}} \div \left(\frac{1}{24}\right)^{-\frac{4}{3}}$$

$$= \left(\frac{1}{6}\right)^{3 \times \left(-\frac{2}{3}\right)} \div \left(\frac{1}{3}\right)^{3 \times \left(-\frac{4}{3}\right)}$$

$$= \left(\frac{1}{6}\right)^{-2} \div \left(\frac{1}{3}\right)^{-4}$$

$$= \left(\frac{6}{1}\right)^{2} \div \left(\frac{3}{1}\right)^{4}$$

$$= 36 \div 81$$

$$= 36 \times \frac{1}{81} = \boxed{\frac{4}{9}}$$

112. If $A = (243)^{0.12} \times (243)^{0.08}$ and $B = \left(\frac{1}{216}\right)^{-\frac{2}{3}} \div \left(\frac{1}{27}\right)^{-\frac{4}{3}}$ then what is the value of $\frac{B}{A}$?

यदि $A = (243)^{0.12} \times (243)^{0.08}$ और $B = \left(\frac{1}{216}\right)^{-\frac{2}{3}} \div \left(\frac{1}{27}\right)^{-\frac{4}{3}}$ तो $\frac{B}{A}$ का मान क्या है?

DOE PRT 13/11/2019 (Shift- 01)

(a) $\frac{3}{4}$

(b) $\frac{4}{27}$ ✓

(c) $\frac{4}{3}$

(d) $\frac{8}{3}$

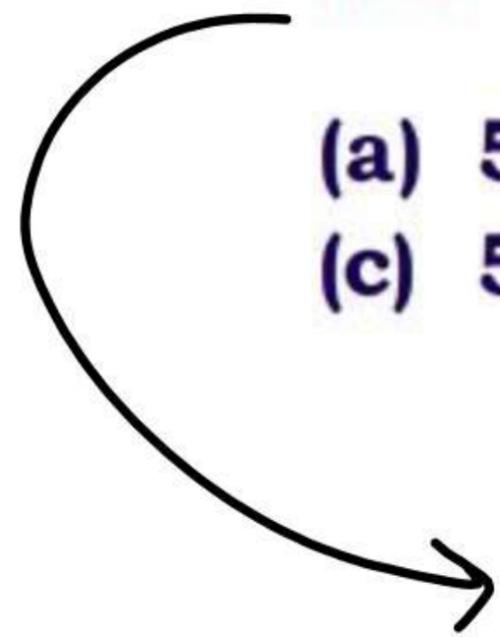$$ans = \left(\frac{\frac{4}{9}}{\frac{3}{1}}\right) = \frac{4}{27}$$

$$a^m \times a^n = a^{m+n}$$

113. Simplify: $\left[\sqrt[3]{\sqrt[6]{5^9}}\right]^4 \left[\sqrt[3]{\sqrt[6]{5^9}}\right]^4$

सरल करे: $\left[\sqrt[3]{\sqrt[6]{5^9}}\right]^4 \left[\sqrt[3]{\sqrt[6]{5^9}}\right]^4$

(a) 5^2

(b) 5^4

(c) 5^8

(d) 5^{12}

$$5^{\frac{9 \times 4}{3 \times 6}} \times 5^{\frac{9 \times 4}{3 \times 6}}$$

$$= 5^2 \times 5^2$$

$$= 5^4$$

114. $\left[8-\left(\dfrac{4^{\frac{9}{4}}\sqrt{2\times2^2}}{2\sqrt{2^{-2}}}\right)^{\frac{1}{2}}\right]$ is equal to

Repeat of
111.

$\left[8-\left(\dfrac{4^{\frac{9}{4}}\sqrt{2\times2^2}}{2\sqrt{2^{-2}}}\right)^{\frac{1}{2}}\right]$ के बराबर है–

(a) 32

(b) 8

(c) 1

(d) 0

$$= \frac{32^{0.13+0.07}}{2^{0.25} \times (2^2)^{0.075} \times (2^3)^{0.2}}$$

$$= \frac{32^{0.20}}{2^{0.25} \times 2^{0.150} \times 2^{0.6}}$$

$$= \frac{(2^5)^{0.20}}{2^1} = \frac{2^1}{2^1} \, 1$$

115. Solve: $\dfrac{(32^{0.13} \times 32^{0.07})}{(2^{0.25} \times 4^{0.075} \times 8^{0.2})}$

हल करे $\dfrac{(32^{0.13} \times 32^{0.07})}{(2^{0.25} \times 4^{0.075} \times 8^{0.2})}$

(a) 2

(b) $\dfrac{1}{3}$

(c) 1 ✓

(d) $\dfrac{1}{2}$

115. Solve: $\dfrac{\left(32^{0.13} \times 32^{0.07}\right)}{\left(2^{0.25} \times 4^{0.075} \times 8^{0.2}\right)}$

$$2^{0.65 + 0.35 - 0.25 - 0.150 - 0.6}$$

$$= 2^{\underline{0.65+0.10}-\underline{0.15-0.60}}$$

$$= 2^{0.75-0.75} = 2^0 = 1$$

हल करे $\dfrac{\left(32^{0.13} \times 32^{0.07}\right)}{\left(2^{0.25} \times 4^{0.075} \times 8^{0.2}\right)}$

(a) 2

(b) $\dfrac{1}{3}$

(c) 1 ✓

(d) $\dfrac{1}{2}$

$$\frac{(625)^{6.25} \times (25)^{2.6}}{(5^4)^{6.75} \times (\sqrt{5})^{2.4}} \times \frac{(0.49)^4 \times (0.343)^4}{(0.2401)^5} \text{ is:}$$

$$\frac{(625)^{6.25} \times (25)^{2.6}}{(5^4)^{6.75} \times (\sqrt{5})^{2.4}} \times \frac{(0.49)^4 \times (0.343)^4}{(0.2401)^5} \text{ का मान है:}$$

TGT SST (Female) 14/11/2018 (Shift- 01)

(a) 25

(b) 0.35

(c) 175

(d) 0.25

Basic

$$\left(\frac{(5^4)^{6.25} \times (5^2)^{2.6}}{5^{4 \times 6.75} \times 5^{\frac{1}{2} \times 2.4}}\right) \times \left(\frac{\left(\frac{49}{100}\right)^4 \times \left(\frac{343}{1000}\right)^4}{\left(\frac{2401}{10000}\right)^5}\right)$$

$$= \left(\frac{5^{25} \times 5^{5.2}}{5^{27} \times 5^{1.2}}\right) \times \left(\frac{\left(\frac{7}{10}\right)^{2 \times 4} \times \left(\frac{7}{10}\right)^{3 \times 4}}{\left(\frac{7}{10}\right)^{4 \times 5}}\right)$$

$$= \left(5^{25 + 5.2 - 27 - 1.2}\right) \times \left(\frac{7}{10}\right)^{8 + 12 - 20}$$

$$= 5^2 \times \left(\frac{7}{10}\right)^0$$

$$= 25 \times 1$$

$$= 25$$

$a^m \times a^n = a^{m+n}$

$\dfrac{a^m}{a^n} = a^{m-n}$

$5^1 = 5$

$5^2 = 25$

$5^3 = 125$

$5^4 = 625$

$7^1 = 7$

$7^2 = 49$

$7^3 = 343$

$7^4 = 2401$

116. The value of

$$\frac{(625)^{6.25} \times (25)^{2.6}}{(5^4)^{6.75} \times (\sqrt{5})^{2.4}} \times \frac{(0.49)^4 \times (0.343)^4}{(0.2401)^5} \text{ is:}$$

$$\frac{(625)^{6.25} \times (25)^{2.6}}{(5^4)^{6.75} \times (\sqrt{5})^{2.4}} \times \frac{(0.49)^4 \times (0.343)^4}{(0.2401)^5} \text{ का मान है:}$$

(a) 25
(b) 0.35
(c) 175
(d) 0.25

Handwritten working:

$$= 5^{4 \times 6.25 + 2 \times 2.6 - 4 \times 6.75 - \frac{1}{2} \times 2.4} \times (0.7)^{2 \times 4 + 3 \times 4 - 4 \times 5}$$

$$= 5^{25 + 5.2 - 27 - 1.2} \times (0.7)^0$$

$$= 5^2 \times 1$$

Right-side annotations:

$4 \overline{(625)}^{6.25} \times (25)^{2.6}$ with $25 = 5^2$

$(0.7)^{4 \times 5}$

$5^{\frac{1}{2} \times 2.4}$

$a^m \times a^n = a^{m+n}$

$\dfrac{a^m}{a^n} = a^{m-n}$

$5^1 = 5$
$5^2 = 25$
$5^3 = 125$
$5^4 = 625$

$7^1 = 7$
$7^2 = 49$
$7^3 = 343$
$7^4 = 2401$

117. On simplification

$$\frac{(49)^{\frac{1}{2}} \times (512)^{0.25} \times (8)^{0.25} \times \underline{(729)}^{\frac{2}{3}} \div (64)^{\frac{4}{3}}}{(343)^{\frac{1}{3}} \times (256)^{-0.375} \times (81)^{0.5}}$$

reduces to / का न्यूनतमक मान है-

(a) 2.25   (b) 1.25

(c) 1.5   (d) 2.5

$$\frac{7^{2\times\frac{1}{2}} \times 2^{9\times0.25} \times 2^{3\times0.25} \times 3^{6\times\frac{2}{3}} \div 2^{6\times\frac{4}{3}}}{7^{3\times\frac{1}{3}} \times 2^{8\times(-0.375)} \times 3^{4\times0.5}}$$

$$= \frac{7^{1} \times 2^{2.25} \times 2^{0.75} \times 3^{4} \times 2^{-8}}{7^{1} \times 2^{-3} \times 3^{2}}$$

$$= 2^{3-8+3} \times 3^{4-2}$$

$$= 2^{-2} \times 3^{2} = \left(\frac{1}{2}\right)^{2} \times 9 = \frac{9}{4} = 2.25$$

$2^{1}=2$

$2^{2}=4$

$2^{3}=8$

$2^{4}=16$

$2^{5}=32$

$2^{6}=64$

$2^{7}=128$

$2^{8}=256$

$2^{9}=512$

$3^{1}=3$

$3^{2}=9$

$3^{3}=27$

$3^{4}=81$

$3^{5}=243$

$3^{6}=729$

117. On simplification

$$\dfrac{(49)^{\frac{1}{2}} \times (512)^{0.25} \times (8)^{0.25} \times (729)^{\frac{2}{3}} \times (64)^{\frac{4}{3}}}{(343)^{\frac{1}{3}} \times (256)^{-0.375} \times (81)^{0.5}}$$

reduces to / का न्यूनतमक मान है–

(a) 2.25

(b) 1.25

(c) 1.5

(d) 2.5

$$2^{9\times0.25+3\times0.25-\frac{2}{6\times\frac{4}{3}}+8\times0.375} \times 3^{\frac{2}{6\times\frac{2}{3}}-4\times0.5}$$

$$= 2^{\boxed{2.25+0.75}-8+3} \times 3^{4-2}$$

$$= \dfrac{2^{-2}}{1} \times 3^{2} = \left(\dfrac{1}{2}\right)^{2} \times 9 = \dfrac{9}{4} = 2.25$$

118 If $5\sqrt{5} \times 5^3 \div 5^{-3/2} = 5^{a+2}$, the value of a is:

यदि $5\sqrt{5} \times 5^3 \div 5^{-3/2} = 5^{a+2}$, a का मान है:

(a) 4
(b) 5
(c) 6
(d) 8

$$5^1 \times 5^{\frac{1}{2}} \times 5^3 \times 5^{\frac{3}{2}} = 5^{a+2}$$

$$\Rightarrow 5^{1+\frac{1}{2}+3+\frac{3}{2}} = 5^{a+2}$$

$$\Rightarrow 5^{4+2} = 5^{a+2}$$

$$4 + 2 = a + 2$$

119. If $\dfrac{3^{a+3} \times 4^{a+6} \times 25^{a+1}}{27^{a-1} \times 8^{a-2} \times 125^{a+4}} = \dfrac{4}{15^{26}}$, then the value of $\sqrt{a+9}$ is:

यदि $\dfrac{3^{a+3} \times 4^{a+6} \times 25^{a+1}}{27^{a-1} \times 8^{a-2} \times 125^{a+4}} = \dfrac{4}{15^{26}}$ है तो $\sqrt{a+9}$ का मान है:

(a) 4   (b) 6

(c) 5   (d) 8

$$\frac{3^{a+3} \times 2^{2(a+6)} \times 5^{2(a+1)}}{3^{3(a-1)} \times 2^{3(a-2)} \times 5^{3(a+4)}} = \frac{2^2}{(3 \times 5)^{26}}$$

$$= 3^{a+3-3a+3} \times 2^{2a+12-3a+6} \times 5^{2a+2-3a-12}$$

$$\Rightarrow 3^{-2a+6} \times 2^{-a+18} \times 5^{-a-10} = 2^2 \times 3^{-26} \times 5^{-26} = \frac{2^2}{3^{26} \times 5^{26}}$$

$-2a+6 = -26$
$+2a = +32$
$a = \dfrac{32}{16}$
$\boxed{a=16}$

$-a+18 = 2$
$+a = +16$

$-a-10 = -26$
$-a = -26+10$
$-a = +16$

119. If $\dfrac{3^{a+3} \times 4^{a+6} \times 25^{a+1}}{27^{a-1} \times 8^{a-2} \times 125^{a+4}} = \dfrac{4}{15^{26}}$, then the value of $\sqrt{a+9}$ is:

यदि $\dfrac{3^{a+3} \times \boxed{4^{a+6}} \times 25^{a+1}}{27^{a-1} \times 8^{a-2} \times 125^{a+4}} = \dfrac{4}{15^{26}}$ है तो $\sqrt{a+9}$ का

$\sqrt{16+9}$

मान है:

(a) 4

(b) 6

(c) 5

(d) 8

$$\dfrac{2^{2(a+6)}}{2^{3(a-2)}} = 2^2$$

$$\Rightarrow 2^{2a+12-3a+6} = 2^2$$

$2^{-a+18} = 2^2$

$-a+18 = 2$

$16 = a$

120. The value of $\dfrac{(243)^{\frac{n}{5}} \times 3^{2n+1}}{9^n \times 3^{n-1}}$ is:

$\dfrac{(243)^{\frac{n}{5}} \times 3^{2n+1}}{9^n \times 3^{n-1}}$ का मान है:

(a) 3

(b) 9

(c) 6

(d) 12

$$\frac{3^{5 \times \frac{n}{5}} \times 3^{2n+1}}{3^{2n} \times 3^{n-1}}$$

$$= 3^{n+2n+1-2n-n+1}$$

$$= 3^2 = 9$$

$3^4 = 2184$ $3^1 = 3$ $a^m \times a^n = a^{m+n}$

$3^2 = 9$

$3^3 = 27$ $\dfrac{a^p}{a^q} = a^{p-q}$

$3^4 = 81$

$3^5 = 243$

$3^6 = 729$

121. The simplest value of the expression

$$\left\{\frac{4^{p+\frac{1}{4}} \times \sqrt{2 \times 2^p}}{2 \times \sqrt{2^{-p}}}\right\}^{\frac{1}{p}} \text{ is:}$$

अभिव्यक्ति का सबसे सरल मान है:

$$\left\{\frac{4^{p+\frac{1}{4}} \times \sqrt{2 \times 2^p}}{2 \times \sqrt{2^{-p}}}\right\}^{\frac{1}{p}}$$

(a) 4　　　　　　　　　(b) 8 ✓

(c) 4^p　　　　　　　　(d) 8^p

$$\left\{\frac{2^{2\left(p+\frac{1}{4}\right)} \times \left(2^1 \times 2^p\right)^{\frac{1}{2}}}{2^1 \times \left(2^{-p}\right)^{\frac{1}{2}}}\right\}^{\frac{1}{p}}$$

$$= \left\{\frac{2^{2p+\frac{2}{4}} \times 2^{(1+p)\frac{1}{2}}}{2^1 \times 2^{-\frac{p}{2}}}\right\}^{\frac{1}{p}}$$

$$= \left\{2^{2p+\frac{1}{2}+\frac{1}{2}+\frac{p}{2}-1+\frac{p}{2}}\right\}^{\frac{1}{p}}$$

$$= \left\{2^{2p+p}\right\}^{\frac{1}{p}} = 2^{3p \times \frac{1}{p}} = 8$$

$a^m \times a^n = a^{m+n}$

put $p=2$

$$\left(\frac{(2^p)^{\frac{9}{p^2}} \times 2^{\frac{3}{2}}}{2^1 \times 2^{-\frac{2}{p}}}\right)^{\frac{1}{2}}$$

$$= \left(2^{\frac{9}{2} + \frac{3}{2} - 1 + 1}\right)^{\frac{1}{2}}$$

$$= 2^{\cancel{6} \times \frac{1}{\cancel{2}}} = 8$$

121. The simplest value of the expression

$$\left\{\frac{4^{p+\frac{1}{4}} \times \sqrt{2 \times 2^p}}{2 \times \sqrt{2^{-p}}}\right\}^{\frac{1}{p}} \text{ is:}$$

अभिव्यक्ति का सबसे सरल मान है:

$$\left\{\frac{4^{p+\frac{1}{4}} \times \sqrt{2 \times 2^p}}{2 \times \sqrt{2^{-p}}}\right\}^{\frac{1}{p}}$$

(a) 4   4
(c) 4^p 16

(b) 8   8
(d) 8^p 64

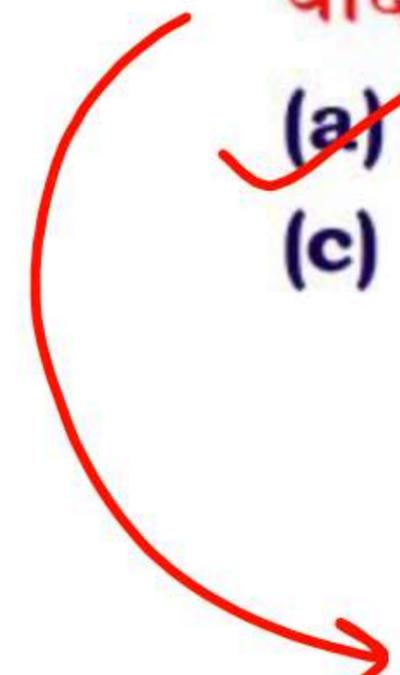$P = 2$

122. If $27^{2x-1} = (243)^3$ then value of x is

यदि $27^{2x-1} = (243)^3$ तो x का मान है।

(a) 3

(b) 6

(c) 7

(d) 9

$$\left(3^3\right)^{2x-1} = \left(3^5\right)^3$$

$$\Rightarrow 3^{6x-3} = 3^{15}$$

$$\Rightarrow 6x-3 = 15$$

$$\Rightarrow 6x = 18$$

$$a^m = a^n$$
$$\therefore m = n$$

123. If $3^{x+y} = 81$ and $81^{x-y} = 3$, then the value of x is

यदि $3^{x+y} = 81$ और $81^{x-y} = 3$, तो x का मान है

$$3^{x+y} = 3^4$$

$$\therefore \boxed{x+y = 4}$$

$$(3^4)^{(x-y)} = 3^1$$

$$4(x-y) = 1$$

$$\therefore x - y = \frac{1}{4}$$

$$+ \; x + y = 4$$

$$\overline{\quad 2x = \frac{1}{4} + 4 \quad}$$

$$\Rightarrow 2x = \frac{17}{4}$$

$$\Rightarrow x = \frac{17}{8}$$

(a) 42

(b) $\dfrac{15}{8}$

(c) $\dfrac{17}{8}$

(d) 39

124. Find the value of $x + y$ if $2^x = 8^{y+1}$ and $9^y = 3^{x-9}$

$x + y$ का मान ज्ञात कीजिए यदि $2^x = 8^{y+1}$ और $9^y = 3^{x-9}$

(a) 22

(b) 24

(c) 26

(d) 27

$$\therefore x + y = 21 + 6 = 27$$

$$2^x = 2^{3(y+1)}$$

$$\boxed{x = 3y + 3}$$

$$\therefore \quad x = 18 + 3$$

$$\boxed{x = 21}$$

$$3^{2y} = 3^{x-9}$$

$$\boxed{2y = x - 9}$$

$$2y = 3y + 3 - 9$$

$$2y = 3y - 6$$

$$\boxed{6 = y}$$

$$3^{2x-y} = 3^{x+y} = 3^{\frac{3}{2}}$$

125. If $3^{2x-y} = 3^{x+y} = \sqrt{27}$, then the value of 3^{x-y} will be:

यदि $3^{2x-y} = 3^{x+y} = \sqrt{27}$, तब 3^{x-y} का मान होगा:

$$2x-y = x+y \quad \bigg| \quad x+y = \frac{3}{2}$$

$$\Rightarrow \boxed{x = 2y} \qquad 2y+y = \frac{3}{2}$$

$$\therefore x = \cancel{2} \times \frac{1}{\cancel{2}} \qquad \Rightarrow \cancel{3}y = \cancel{\frac{3}{2}}^{1}$$

$$\boxed{x=1} \qquad \boxed{y = \frac{1}{2}}$$

(a) 3

(b) $\dfrac{1}{\sqrt{3}}$

(c) ✓ $\sqrt{3}$

(d) $\dfrac{1}{\sqrt{27}}$

$$\underline{a = b} = c$$

$$\therefore 3^{x-y} = 3^{1-\frac{1}{2}} = 3^{\frac{1}{2}} = \sqrt{3}$$

126. Solve for x:

$$3^x - 3^{x-1} = 486$$

x के लिए हल करें:

$$3^x - 3^{x-1} = 486$$

(a) 7

(b) 9

(c) 6

(d) 5

$$3^x - (3^x \times 3^{-1}) = 486$$

$$\Rightarrow 3^x \left\{ 1 - \frac{1}{3^1} \right\} = 486$$

$$\Rightarrow 3^x \times \frac{2}{3} = 486 \quad (243)$$

$$\Rightarrow 3^x = 729$$

$$\Rightarrow 3^x = 3^6$$

$$\boxed{x = 6}$$

$$a^m \times a^n = a^{m+n}$$

$$a^{-m} = \frac{1}{a^m}$$

(a) $\quad 3^4 - 3^6 = 3^6(3^1 - 1) = 729 \times 2$
$$= 1458$$

(c) $\quad 3^6 - 3^5 = 3^5(3^1 - 1) = 243 \times 2 = 486$

126. **Solve for x:**

$$3^x - 3^{x-1} = 486$$

x के लिए हल करें:

$$3^x - 3^{x-1} = 486$$

(a) 7

(b) 9

(c) 6

(d) 5

put option

(d) $2^6 + 2^8$

$= 64 + 256$

$= \underline{320}$

127. If $2^{x-1} + 2^{x+1} = 320$, then the value of x is

यदि $2^{x-1} + 2^{x+1} = 320$, तो x का मान है

(a) 0

(b) 9

(c) 10

(d) 7

$2^1 = 2$ $2^8 = 256$

$2^2 = 4$

$2^3 = 8$

$2^4 = 16$

$2^5 = 32$

$2^6 = 64$

$2^7 = 128$

Use option

(b) $8^2 - 8^0$

$= 64 - 1$

$= 63$

128. If $8^{x+1} - 8^{x-1} = 63$, find x

यदि $8^{x+1} - 8^{x-1} = 63$ है, तो x ज्ञात कीजिए

(a) 0

(b) 1

(c) −1

(d) 63

129. If $2^x + 3^y = 17$ and $2^{x+2} - 3^{y+1} = 5$, then:

यदि $2^x + 3^y = 17$ तथा $2^{x+2} - 3^{y+1} = 5$ है, तो:

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(a) $x = 1, y = 3$ (b) $x = 3, y = 3$

(c) $x = 3, y = 2$ (d) $x = 1, y = 2$

$$2^3 + 3^2$$
$$= 8 + 9$$
$$= 17$$

$$2^5 - 3^3$$
$$= 32 - 24$$
$$= 5$$

put $y=3$

$\therefore 5^x - 3^3 = 13438$ ✗

$\Rightarrow 5^x = 13465$

put $(y=7)$

$\therefore 5^x - 3^7 = 13438$

$\Rightarrow 5^x - 2184 = 13438$

$\Rightarrow 5^x = 15625$

$\Rightarrow 5^x = 5^6$

$(x=6)$

$\therefore x+y = 6+7$
$= 13$

---

130. If $5^x - 3^y = 13438$ and $5^{x-1} + 3^{y+1} = 9686$, then
$x+y = ?$

यदि $5^x - 3^y = 13438$ और $5^{x-1} + 3^{y+1} = 9686$, तो
$x+y = ?$

(a) 9

(b) 11

(c) 13

(d) 15

$5^1 = 5$
$5^2 = 25$
$5^3 = 125$
$5^4 = 625$
$5^5 = 3125$
$5^6 = 15625$

$3^3 = 27$
$3^4 = 81$
$3^5 = 243$
$3^6 = 729$
$3^7 = 2187$

$$\frac{5^x}{5^1} + 3^y \times 3^1 = 9686$$

$$\Rightarrow \frac{13438+3^y}{5} + 3^y \times 3 = 9686$$

$$\Rightarrow \frac{13438+3^y+3^y \times 15}{5} = 9686$$

$$\Rightarrow 13438+3^y \times 16 = 48430$$

$$\Rightarrow 3^y \times 16 = \cancel{34992}$$
$$\qquad\qquad 2184$$

$$\therefore 3^y = 2184$$

$$3^y = 3^7$$

$$\boxed{y=7}$$

130 If $5^x - 3^y = 13438$ and $5^{x-1} + 3^{y+1} = 9686$, then $x+y = $?

यदि $5^x - 3^y = 13438$ और $5^{x-1} + 3^{y+1} = 9686$, तो $x+y = $?

(a) 9

(b) 11

(c) 13

(d) 15

$$5^{x-1} = \frac{5^x}{5^1}$$

$$5^x - 3^7 = 13438$$

$$5^x - 2187 = 13438$$

$$5^x = 15625$$

$$5^x = 5^6$$

$$\boxed{x=6}$$

$$x+y = 6+7 = 13$$

131. If $x^{x\sqrt{x}} = (x\sqrt{x})^x$ then, x equals

यदि $x^{x\sqrt{x}} = (x\sqrt{x})^x$ है, तो x बराबर है

(a) $\dfrac{4}{9}$

(b) $\dfrac{2}{3}$

(c) $\dfrac{9}{4}$

(d) $\dfrac{3}{2}$

$$x^{x^1 \cdot x^{\frac{1}{2}}} = \left(x^1 \cdot x^{\frac{1}{2}}\right)^x$$

$$\Rightarrow x^{x^{1+\frac{1}{2}}} = \left(x^{1+\frac{1}{2}}\right)^x$$

$$\Rightarrow x^{x^{\frac{3}{2}}} = x^{\frac{3}{2}x}$$

$$\Rightarrow x^{\frac{3}{2}} = \frac{3}{2}x^1$$

$$\Rightarrow \frac{x^{\frac{3}{2}}}{x^1} = \frac{3}{2}$$

$$x^{\frac{3}{2}-1} = \frac{3}{2}$$

$$\Rightarrow \left(x^{\frac{1}{2}}\right)^2 = \left(\frac{3}{2}\right)^2$$

$$x^1 = \frac{9}{4}$$

$$x^{x^{\frac{3}{2}}} = x^{\frac{3}{2}x}$$

$$\Rightarrow \left(x^{\frac{3}{2}}\right)^2 = \left(\frac{3}{2}x\right)^2$$

$$x^3 = \frac{9}{4} \cdot x^2$$

131. If $x^{x\sqrt{x}} = (x\sqrt{x})^x$ then, x equals

यदि $x^{x\sqrt{x}} = (x\sqrt{x})^x$ है, तो x बराबर है

(a) $\dfrac{4}{9}$

(b) $\dfrac{2}{3}$

(c) $\dfrac{9}{4}$

(d) $\dfrac{3}{2}$

132. If $9^{x-\frac{1}{2}} - 2^{2x-2} = 4^x - 3^{2x-3}$, then x is

H.W//

यदि $9^{x-\frac{1}{2}} - 2^{2x-2} = 4^x - 3^{2x-3}$, तो x है

(a) $\dfrac{3}{2}$

(b) $\dfrac{2}{5}$

(c) $\dfrac{3}{4}$

(d) $\dfrac{4}{9}$

$$2^{0.7x} \times 3^{-1.25y} = \frac{2^3 \times 2^{\frac{1}{2}} \times 3^{\frac{1}{2}}}{3^3}$$

$$2^{0.7x} \times 3^{-1.25y} = 2^{3.5} \times 3^{-2.5}$$

$$0.7x = 3.5 \quad \Big| \quad +1.25y = -2.5$$

$$x = 5 \quad \Big| \quad y = 2$$

133. What are the values of x and y that satisfy both the equations?

$$2^{0.7x} \cdot 3^{-1.25y} = 8\frac{\sqrt{6}}{27} \quad \to \sqrt{2} \times \sqrt{3}$$

$$2^{0.7x} \cdot 3^{-1.25y} = 8\frac{\sqrt{6}}{27} \text{ and } 4^{0.3x} \cdot 9^{0.2y} = 8(81)^{1/5}$$

x और y के वे कौन से मान हैं जो दोनों समीकरणों को संतुष्ट करते हैं?

$$2^{0.7x} \cdot 3^{-1.25y} = 8\frac{\sqrt{6}}{27} \text{ और } 4^{0.3x} \cdot 9^{0.2y} = 8(81)^{1/5}$$

(a) $x = 2, y = 5$ (b) $x = 5, y = 2$

(c) $x = 2.5, y = 6$ (d) $x = 3, y = 5$