

16. The value of $\frac{2\sqrt{10}}{\sqrt{5+\sqrt{2}-\sqrt{7}}} - \sqrt{\frac{\sqrt{5}-2}{\sqrt{5}+2}} - \frac{3}{\sqrt{7}-2}$ is:

$\frac{2\sqrt{10}}{\sqrt{5+\sqrt{2}-\sqrt{7}}} - \sqrt{\frac{\sqrt{5}-2}{\sqrt{5}+2}} - \frac{3}{\sqrt{7}-2}$ का मान क्या है?
 a) $2 + \sqrt{2}$ b) $2\sqrt{5}$ c) $\sqrt{2}$ d) $\sqrt{7}$

$$\frac{2\sqrt{10}(\sqrt{5} + \sqrt{2} + \sqrt{7})}{7 + 2\sqrt{10} - 7} - \sqrt{5} + 2 - \frac{3(\sqrt{7} + 2)}{7}$$

$$= \sqrt{5} + \sqrt{2} + \sqrt{7} - \sqrt{5} + 2 - \sqrt{7} - 2$$

$$= \sqrt{2}$$

17. What is the value of $\frac{1}{1+\sqrt{2}+\sqrt{3}} + \frac{1}{1-\sqrt{2}+\sqrt{3}}$?

$\frac{1}{1+\sqrt{2}+\sqrt{3}} + \frac{1}{1-\sqrt{2}+\sqrt{3}}$ का मान क्या होगा ?

~~a) 1~~

b) $\sqrt{2}$

c) $\sqrt{3}$

d) 2

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

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

coaching center

$$\begin{aligned}
 k &= \frac{-12}{\sqrt{2} + \sqrt{5} - \sqrt{3}} \\
 &= \frac{-12(\sqrt{2} + \sqrt{5} + \sqrt{3})}{(\sqrt{2} + \sqrt{5} + \sqrt{3})(\sqrt{2} + \sqrt{5} - \sqrt{3})} \\
 &= \frac{-12(\sqrt{2} + \sqrt{5} + \sqrt{3})(2 - \sqrt{10})}{(2 + \sqrt{10})} \\
 &= \frac{-6(\sqrt{2} + \sqrt{5} + \sqrt{3})(2 - \sqrt{10})}{-6}
 \end{aligned}$$

18. If $(\sqrt{2} + \sqrt{5} - \sqrt{3}) \times k = -12$, then what will be the value of k?

यदि $(\sqrt{2} + \sqrt{5} - \sqrt{3}) \times k = -12$, तो K का मान क्या होगा?

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

b) $(\sqrt{2} + \sqrt{5} + \sqrt{3})(2 - \sqrt{10})$

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

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

coaching center

$$\left(\frac{\sqrt{2}+\sqrt{3}+\sqrt{5}}{a}\right) \left(\frac{\sqrt{2}+\sqrt{3}-\sqrt{5}}{b}\right)$$

$$= \cancel{5} + 2\sqrt{6} - \cancel{5} \times \sqrt{6}$$

$$= 12$$

19. Which of the following can be a rationalizing factor $(\sqrt{2} + \sqrt{3} + \sqrt{5})$?

निम्नलिखित में से कौन-सा $(\sqrt{2} + \sqrt{3} + \sqrt{5})$ का परिमेकरण गुणांक सकता है?

a) $(\sqrt{2} - \sqrt{3} - \sqrt{5})\sqrt{6}$

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

c) $(\sqrt{2} - \sqrt{3} + \sqrt{5})\sqrt{6}$

~~d) $(\sqrt{2} + \sqrt{3} - \sqrt{5})\sqrt{6}$~~

coaching center

20. The value of $5\sqrt{3} + 7\sqrt{2} - \sqrt{6} - \frac{23}{\sqrt{2} + \sqrt{3} + \sqrt{6}}$ is:

$5\sqrt{3} + 7\sqrt{2} - \sqrt{6} - \frac{23}{\sqrt{2} + \sqrt{3} + \sqrt{6}}$ का मान है:

a) 0 b) 16 c) 12 d) 10

$$\frac{23(\sqrt{2} + \sqrt{3} - \sqrt{6})(2\sqrt{6} + 1)}{5 + 2\sqrt{6} - 6}$$

~~$5\sqrt{3} + 7\sqrt{2} - \sqrt{6} - 2\sqrt{2} - \sqrt{2} - 2\sqrt{3}$~~
 ~~$= 4\sqrt{3} - \sqrt{2} - 2\sqrt{3}$~~
 ~~$= 2\sqrt{3} - \sqrt{2}$~~
 ~~$- \sqrt{3} + 12 + \sqrt{6}$~~

coaching center

Square root of surd

(करणी का वर्गमूल)

coaching center

$$(\sqrt{a} + \sqrt{b})^2 = (\sqrt{a})^2 + (\sqrt{b})^2 + 2\sqrt{a} \cdot \sqrt{b}$$

$$= a + b + 2\sqrt{ab}$$

Sum

$\frac{2ab}{\sqrt{ab}}$
 $\frac{2\sqrt{ab}}{\sqrt{ab}}$

Product

coaching center

$$(\sqrt{2} + \sqrt{3})^2 = 2 + 3 + 2\sqrt{6}$$

$$= 5 + 2\sqrt{6}$$

$$\Rightarrow \sqrt{2} + \sqrt{3} = \sqrt{5 + 2\sqrt{6}}$$

Sum 2ab द्वारा 2 prod

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

$$\sqrt{8 + 2\sqrt{15}} < \frac{5}{3}$$

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

$$\sqrt{7 - 2\sqrt{6}} \rightarrow 6 \times 1$$

$$= \sqrt{6} - \sqrt{1}$$

$$\sqrt{16} = 4 \neq -4$$

$$\sqrt{1 - \sqrt{6}}$$

coaching center

$$(\sqrt{a} + \sqrt{b})^2$$

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

\swarrow
 4×3

$$\sqrt{16 + \sqrt{60}} = \sqrt{15} + 1$$

\swarrow
 4×15
 $+ 2\sqrt{15} < 15$

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

\swarrow
 5×3

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

\swarrow
 2×1

$$\sqrt{6 - \sqrt{20}} = \sqrt{5} - 1$$

\swarrow
 4×5
 $- 2\sqrt{5} < 5$

$$\sqrt{\frac{8 - 2\sqrt{15}}{2}} = \frac{\sqrt{5} - \sqrt{3}}{\sqrt{2}}$$

\swarrow
 5×3

$$\sqrt{10 + 4\sqrt{6}} = \sqrt{6} + 2$$

\swarrow
 2×2
 $+ 2\sqrt{24} < 6$

$$\sqrt{\frac{6 + \sqrt{35}}{2}} = \frac{\sqrt{7} + \sqrt{5}}{\sqrt{2}}$$

\swarrow
 1×2
 \swarrow
 $12 + 2\sqrt{35}$

$$\sqrt{9 - 6\sqrt{2}} = \sqrt{6} - \sqrt{3}$$

\swarrow
 2×3
 $2\sqrt{18} < 6$

$$\sqrt{4 - \sqrt{15}} = \sqrt{5} - 1$$

\swarrow
 1×5

$$\sqrt{7} - \sqrt{3} + \sqrt{5} + \sqrt{3} = \sqrt{a} + \sqrt{b}$$

$$\sqrt{7 \times 5} = \sqrt{35}$$

1. If $\sqrt{10 - 2\sqrt{21}} + \sqrt{8 + 2\sqrt{15}} = \sqrt{a} + \sqrt{b}$, where a and b are positive integers, then the value of \sqrt{ab} is closest to:

अगर $\sqrt{10 - 2\sqrt{21}} + \sqrt{8 + 2\sqrt{15}} = \sqrt{a} + \sqrt{b}$, जहां a और b सकारात्मक पूर्णांक हैं, तो \sqrt{ab} का मान इसके सबसे करीब है:

a) 4.6

~~b) 5.9~~

c) 6.8

d) 7.2

coaching center

2. If $\sqrt{28 - 6\sqrt{3}} = \sqrt{3}a + b$, (where a, b are rationales), value of (a + b) is

अगर $\sqrt{28 - 6\sqrt{3}} = \sqrt{3}a + b$ है तो (जहाँ a, b परिमेय संख्याएं हैं) (a + b) का मान पता करा।

a) 4

b) -1

c) -2

~~d) 2~~

$$\sqrt{28 - 2\sqrt{27}}$$

27×1

$$= \sqrt{27} - 1$$

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

coaching center

3. The value of $\sqrt{28 + 10\sqrt{3}} - \sqrt{7 - 4\sqrt{3}}$ is closest to:

$\sqrt{28 + 10\sqrt{3}} - \sqrt{7 - 4\sqrt{3}}$ का मान निम्नलिखित में से किसके सबसे अधिक निकट है?

- a) 7.2 2×5 b) 6.1 2×2 ~~c) 6.5~~ d) 3.0

$$\sqrt{28 + 2\sqrt{25 \times 3}} - \sqrt{7 - 2\sqrt{4 \times 3}}$$

$$= 5 + \sqrt{3} - 2 + \sqrt{3}$$

$$= 3 + 2\sqrt{3} = 3 + 3.464$$

$\frac{1.732}{2}$

4. Find the value of $\sqrt{2 + \sqrt{3}} + \sqrt{2 - \sqrt{3}}$.

$\sqrt{2 + \sqrt{3}} + \sqrt{2 - \sqrt{3}}$ का मान ज्ञात कीजिए।
a) $\sqrt{6}$ b) 6 c) $2\sqrt{3}$ d) $2\sqrt{2}$

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

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

$$= \frac{\sqrt{2}\sqrt{3}}{\sqrt{2}} = \sqrt{6}$$

5. If $x = \sqrt{1 + \frac{\sqrt{3}}{2}} - \sqrt{1 - \frac{\sqrt{3}}{2}}$, then the value of

$\frac{\sqrt{3-x}}{\sqrt{3+x}}$ (corrected to two decimal places) is:

यदि $x = \sqrt{1 + \frac{\sqrt{3}}{2}} - \sqrt{1 - \frac{\sqrt{3}}{2}}$ है, तो $\frac{\sqrt{3-x}}{\sqrt{3+x}}$ का मान ज्ञात करें। (दशमलव के दो स्थानों तक सही)

- a) 0.19 b) 0.25 c) 0.17 d) 0.27

$$\frac{\sqrt{3+1}}{2} = \sqrt{\frac{4+2\sqrt{3}}{4}} = \sqrt{\frac{2+\sqrt{3}}{2}}$$

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

$$\begin{aligned} \frac{\sqrt{3-1}}{\sqrt{3+1}} &= \frac{2}{2+2\sqrt{3}} \\ &= 2 - 1.73 \\ &= .27 \end{aligned}$$

coaching center

$$\frac{\sqrt{a}}{\sqrt{b}} = \sqrt{\frac{a}{b}}$$

$$\sqrt{\frac{76-2\sqrt{75}}{52+2\sqrt{49 \times 3}}} \rightarrow 75 \times 1$$

$$= \frac{5\sqrt{3} - 1}{7 + \sqrt{3}}$$

$$= \frac{(5\sqrt{3}-1)(7-\sqrt{3})}{46} = \frac{35\sqrt{3} - 15 - 7 + \sqrt{3}}{46} = \frac{36\sqrt{3} - 22}{46} = \frac{18\sqrt{3} - 11}{23}$$

6. If $\frac{\sqrt{38-5\sqrt{3}}}{\sqrt{26+7\sqrt{3}}} = \frac{a+b\sqrt{3}}{23}$, $b > 0$, then the value of $(b - a)$ is:

यदि $\frac{\sqrt{38-5\sqrt{3}}}{\sqrt{26+7\sqrt{3}}} = \frac{a+b\sqrt{3}}{23}$, $b > 0$ हो, तो $(b - a)$ का मान कितना होगा?

a) 7

b) 18

~~c) 29~~

d) 11

$$18 - (-11) = 29$$

$$\sqrt{\frac{52-2\sqrt{49 \times 3}}{28+2\sqrt{25 \times 3}}}$$

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

$$= \frac{35-7\sqrt{3}-5\sqrt{3}+3}{22}$$

$$= \frac{38-12\sqrt{3}}{22}$$

$$= \frac{19-6\sqrt{3}}{11}$$

7. If $\frac{\sqrt{26-7\sqrt{3}}}{\sqrt{14+5\sqrt{3}}} = \frac{b+a\sqrt{3}}{11}$, $b > 0$, then what is the value of $\sqrt{(b-a)}$?

यदि $\frac{\sqrt{26-7\sqrt{3}}}{\sqrt{14+5\sqrt{3}}} = \frac{b+a\sqrt{3}}{11}$, $b > 0$ हो, तो

$\sqrt{(b-a)}$ का मान कितना होगा?

- a) 5 b) 25 c) 12 d) 9

$$\sqrt{19-(-6)}$$

coaching center

8. The value of $\sqrt[4]{24 - 16\sqrt{2}} \times \sqrt{4 + 2\sqrt{2}}$:

$$\sqrt[4]{24 - 2\sqrt{128}}$$

16 8

4
 $\sqrt[4]{24 - 16\sqrt{2}} \times \sqrt{4 + 2\sqrt{2}}$: का मान कितना है?
a) $4\sqrt{2}$ ~~b) $2\sqrt{2}$~~ c) 4 d) 8
2 OR square root

$$= 2\sqrt{4 - 2\sqrt{2}} \times 2\sqrt{4 + 2\sqrt{2}}$$

$$\sqrt{a} \times \sqrt{b} = \sqrt{ab}$$

$$= \sqrt{16 - 8} = \sqrt{8} = 2\sqrt{2}$$

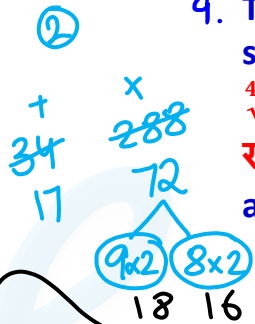
coaching center

$$\sqrt[4]{34 - 2\sqrt{288}}$$

$$= 2\sqrt{\sqrt{18} - 4}$$

$$= 2\sqrt{3\sqrt{2} - 4} \times 2\sqrt{4 + 3\sqrt{2}}$$

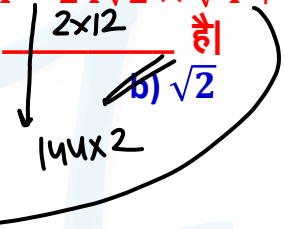
$$= \sqrt{18 - 16} = \sqrt{2}$$



9. The expression $\sqrt[4]{34 - 24\sqrt{2}} \times \sqrt{4 + 3\sqrt{2}}$ simplifies to:

$\sqrt[4]{34 - 24\sqrt{2}} \times \sqrt{4 + 3\sqrt{2}}$ व्यंजक का सरलतम रूप है।

- a) 4 b) $\sqrt{2}$ c) 2 d) $2\sqrt{2}$



coaching center

10. If $x = 3 + 2\sqrt{2}$, then value of $\sqrt{x} - \frac{1}{\sqrt{x}}$ is

अगर $x = 3 + 2\sqrt{2}$ है तो $\sqrt{x} - \frac{1}{\sqrt{x}} = ?$

a) 1

b) $2\sqrt{2}$

~~c) 2~~

d) $3\sqrt{3}$

$$\sqrt{x} = \sqrt{3 + 2\sqrt{2}} \rightarrow 2 \times 1$$

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

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

$$\sqrt{2} + 1 - \sqrt{2} + 1$$

coaching center

11. If $x = 7 - 4\sqrt{3}$ then $\sqrt{x} + \frac{1}{\sqrt{x}}$ is

(HW)

अगर $x = 7 - 4\sqrt{3}$ है तो $\sqrt{x} + \frac{1}{\sqrt{x}} = ?$

a) 1

b) 2

c) 3

d) 4

$$\begin{aligned}\sqrt{x} &= \sqrt{7 - 4\sqrt{3}} \\ &\quad \downarrow \\ &\quad 2 \times 2 \\ &= \sqrt{7 - 2\sqrt{12}} \rightarrow 4 \times 3\end{aligned}$$

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

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

$$\begin{aligned}&2 - \sqrt{3} + 2 + \sqrt{3} \\ &= 4\end{aligned}$$

coaching center

12.

$$-\sqrt{3} + \sqrt{3 + 8\sqrt{7 + 4\sqrt{3}}}$$

a) 1

~~b) 2~~

c) 3

d) 8

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

$$= 2$$

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

↓
4 × 3

$$2 + \sqrt{3}$$

$$\sqrt{3 + 16 + 8\sqrt{3}} = \sqrt{19 + 2\sqrt{16 \times 3}}$$

$$= 4 + \sqrt{3}$$

coaching center

13. If $\sqrt{86 - 60\sqrt{2}} = a - b\sqrt{2}$, then what will be the value of $\sqrt{a^2 + b^2}$, correct to one decimal place?

यदि $\sqrt{86 - 60\sqrt{2}} = a - b\sqrt{2}$ है, तो $\sqrt{a^2 + b^2}$ का एक दशमलव स्थान तक सही मान क्या होगा?

- a) 8.4 b) 8.2 c) 7.8 d) 7.2

$$\sqrt{25+36} = \sqrt{61}$$

$$\begin{array}{r} 7.8 \\ 7 \overline{) 61.0000} \\ \underline{49} \\ 148 \\ \underline{1200} \\ 1184 \\ \underline{1184} \\ 0 \end{array}$$

$$= 5\sqrt{2} - 6$$

Handwritten calculations:

- 2 (circled)
- $+ 86$ (crossed out), 43
- $\times 1800$ (crossed out), 450
- $5 \times 9 \times 10$ (crossed out), 5×2
- 18×2 (circled)
- 25×2 (circled)

coaching center

14. HW

$$\frac{1}{\sqrt{12-\sqrt{140}}} - \frac{1}{\sqrt{8-\sqrt{60}}} - \frac{2}{\sqrt{10+\sqrt{84}}}$$

~~a) 0~~ b) 1 c) 2 d) 4

4x35 4x15 4x21

$$\frac{1}{\sqrt{12-2\sqrt{35}}} - \frac{1}{\sqrt{8-2\sqrt{15}}} - \frac{2}{\sqrt{10+2\sqrt{21}}}$$

5x7 5x3 7x3

$$= \frac{1}{\sqrt{7}-\sqrt{5}} - \frac{1}{\sqrt{5}-\sqrt{3}} - \frac{2}{\sqrt{7}+\sqrt{3}}$$

$$= \frac{\sqrt{7}+\sqrt{5}}{2} - \frac{\sqrt{5}+\sqrt{3}}{2} - \frac{2(\sqrt{7}-\sqrt{3})}{4}$$

$$= \frac{\cancel{\sqrt{7}}+\cancel{\sqrt{5}}-\cancel{\sqrt{5}}-\cancel{\sqrt{3}}-\cancel{\sqrt{7}}+\cancel{\sqrt{3}}}{2} = \frac{0}{2} = 0$$

15. If $x = 5 - \sqrt{21}$, find the value of $\frac{\sqrt{x}}{\sqrt{32-2x-\sqrt{21}}}$

(HW)

यदि $x = 5 - \sqrt{21}$ तो $\frac{\sqrt{x}}{\sqrt{32-2x-\sqrt{21}}}$ का मान बताओ।

a) $\frac{1}{2}(\sqrt{3} - \sqrt{7})$

b) $\frac{1}{\sqrt{2}}(\sqrt{7} - \sqrt{3})$

c) $\frac{1}{\sqrt{2}}(\sqrt{7} + \sqrt{3})$

~~d) $\frac{1}{\sqrt{2}}(\sqrt{3} - \sqrt{7})$~~

$$\begin{aligned}\sqrt{x} &= \sqrt{\frac{5-\sqrt{21}}{2}} = \sqrt{\frac{10-2\sqrt{21}}{2}} \\ &= \frac{\sqrt{7}-\sqrt{3}}{\sqrt{2}}\end{aligned}$$

$$\frac{\sqrt{7}-\sqrt{3}}{\sqrt{2}(\sqrt{21}-1-\sqrt{21})} = \frac{\sqrt{7}-\sqrt{3}}{-\sqrt{2}} = \frac{1}{\sqrt{2}}(\sqrt{3}-\sqrt{7})$$

$$\begin{aligned}\sqrt{32-2x} &= \sqrt{32-10-2\sqrt{21}} \\ &= \sqrt{22-2\sqrt{21}} = \sqrt{21}-1\end{aligned}$$