530. The value of $\frac{0.896\times0.752+0.112\times1.984}{0.7\times0.034+2.1\times(0.322)}+\frac{(4.2)^3+(2.8)^3}{(4.2)^2-(2.8)^2}$ is:

$\frac{0.896\times0.752+0.112\times1.984}{0.7\times0.034+2.1\times(0.322)}+\frac{(4.2)^3+(2.8)^3}{(4.2)^2-(2.8)^2}$ का मान कितना होगा?

a) 11.08 b) 10.32 c) 10.92 d) 9.68

$= \frac{1}{100}\times\frac{8\times8\times1000}{500}+\frac{1.4^3\times(3^3+2^3)}{1.4^2\times(3^2-2^2)}$

$= 1.28+\frac{14}{10}\times\frac{35}{5}$

$\frac{9.8}{11.08}$

53. If the sum of two positive numbers is 65 and square root of their product is 26, then the sum of their reciprocals is:

यदि दो धनात्मक संख्याओं का योग 65 है, तो उनके व्युत्क्रमों का योग ज्ञात करें|

a) $\frac{5}{52}$ b) $\frac{3}{52}$ c) $\frac{1}{52}$ d) $\frac{7}{52}$

$$\frac{1}{a}+\frac{1}{b}=\frac{a+b}{ab}$$

$$=\frac{65}{26\times 26}=\frac{5}{52}$$

$$\sqrt{ab}=26$$

532. If $(2x + 3y + 4)(2x + 3y - 5)$ is equivalent to $(ax^2 + by^2 + 2hxy + 2gx + 2fy + c)$, then what is the value of $\{(g + f - c)/abh\}$

अगर $(2x + 3y + 4)(2x + 3y - 5)$, $(ax^2 + by^2 + 2hxy + 2gx + 2fy + c)$, के बराबर है, तो क्या है $\{(g + f - c)/abh\}$

a) 35/432 b) 19/108
c) 19/316 d) 37/216

$a = 4$

$b = 9$

$2h = 6 + 6 = 12$ ~~6~~

$2g = -10 + 8 = -2 = -1$

$2f = -15 + 12 = -3 = -1.5$

$C = -20$

$$\frac{-1 - 1.5 + 20}{4 \times 9 \times 6} = \frac{35}{2 \times 4 \times 9 \times 6}$$

72

SSC CHSL 9 Dec 2019 S1

533. For a number, greater than one, the difference between itself and its reciprocal is 20% of the sum of itself and its reciprocal. By how much percentage (nearest to an integer) is the square of the number less than its cube?

एक संख्या के लिए, एक से अधिक, स्वयं और उसके पारस्परिक के बीच का अंतर स्वयं और उसके पारस्परिक योग का 20% है। कितने प्रतिशत से (एक पूर्णांक के निकट) संख्या का वर्ग इसके घन से कम है?

a) 122 b) 18
c) 81 d) 33

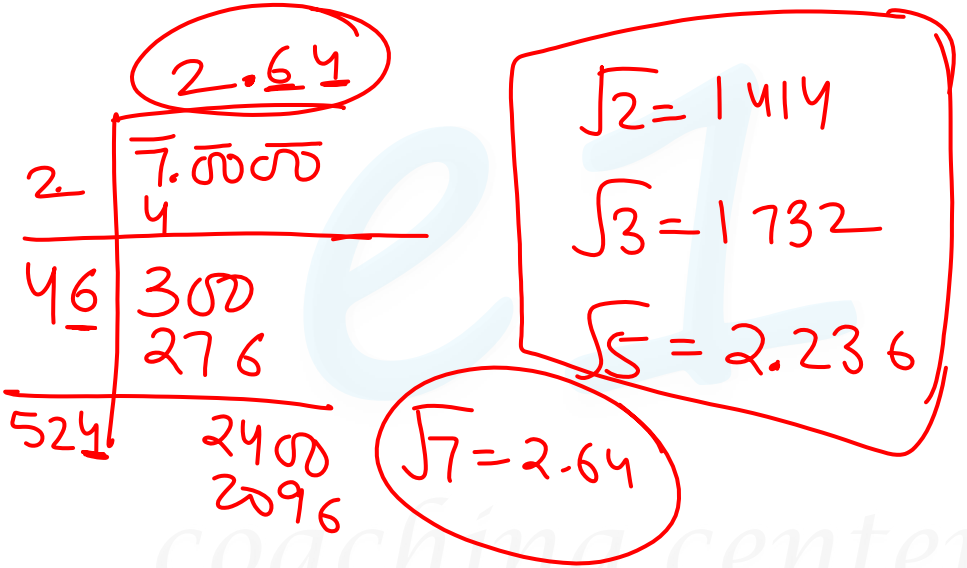
$\text{diff} = \frac{1}{5} \times \text{Sum}$

$\left(x - \frac{1}{x}\right)5 = x + \frac{1}{x}$

$\Rightarrow 4x = \frac{6}{x}$

$\Rightarrow x^2 = \frac{3}{2} \quad x = \frac{\sqrt{3}}{\sqrt{2}}$

$\frac{x^2}{x^3} = \frac{1}{x} = \frac{\sqrt{2}}{\sqrt{3}} = \frac{1.41}{1.73} \uparrow 32 \quad \frac{32}{173}$



$$\left(x-\frac{1}{x}\right)^4 = x+\frac{1}{x}$$

$$\Rightarrow 3x = \frac{5}{x}$$

$$\Rightarrow x^2 = \frac{5}{3}$$

$$\frac{x^4}{x^2} = x^2 = \frac{5}{3} \quad 2$$

534. (HW) With a reference to a number greater than one, the difference between itself and its reciprocal is 25% of the sum of itself and its reciprocal. By how much percentage (correct one decimal place) is the fourth power of the number greater than its square?

एक से अधिक संख्या के संदर्भ में, स्वयं और उसके पारस्परिक के बीच का अंतर, स्वयं और उसके पारस्परिक के योग का 25% है। कितने प्रतिशत से (सही एक दशमलव स्थान) संख्या की चौथी घात उसके वर्ग से अधिक है?

a) 57.8 b) 62.5

c) 64.5 d) 66.7

535. If $(1.25)(1-6.4\times10^{-5}) = 1.2496 + a$, then a is equal to:

यदि $(1.25)(1-6.4\times10^{-5}) = 1.2496 + a$, तो a के बराबर क्या है:

a) 0.0016 b) 0.00016 c) 0.0032 d) 0.00032

$10^{-5} = \frac{1}{10^5}$

$1.25 - \frac{5}{4}\times 6.4 \times 10^{-5}$ (1.6)

$= 1.25 - .00008 - 1.24960 = a$

$.00008$

1.24968

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

$a = 1.25000 - 1.24968$

$.00032$

536. If $x = 1+\sqrt{2}+\sqrt{3}$, find the value of $2x^4 - 8x^3 - 5x^2 + 26x - 28$.

यदि $x = 1+\sqrt{2}+\sqrt{3}$ है, तो $2x^4 - 8x^3 - 5x^2 + 26x - 28$ का मान क्या है?

a) $2\sqrt{2}$ b) $3\sqrt{3}$ c) $5\sqrt{5}$ d) $6\sqrt{6}$

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

SBS → $x^2-2x+1 = 5+2\sqrt{6}$

$\Rightarrow x^2-2x-4 = 2\sqrt{6}$

$(\ )^2$ $\Rightarrow x^4+4x^2+16-4x^3+16x-8x^2 = 24$

$\Rightarrow x^4-4x^3-4x^2+16x-8=0$

$\Rightarrow 2x^4-8x^3-8x^2+32x-16=0$

$-5x^2+26x-12$ $\quad 3x^2-6x-12$

$=3(x^2-2x-4)$

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

SSC CGL T2, 30 Nov 2016

537. The value of $(a^{\frac{2}{3}} + 2a^{\frac{1}{2}} + 3a^{\frac{1}{3}} + 2a^{\frac{1}{6}} + 1)(a^{\frac{1}{3}} - 2a^{\frac{1}{6}} + 1) - a^{\frac{1}{2}}(a^{\frac{1}{2}} - 2)$, When $a = 7$, is:

$(a^{\frac{2}{3}} + 2a^{\frac{1}{2}} + 3a^{\frac{1}{3}} + 2a^{\frac{1}{6}} + 1)(a^{\frac{1}{3}} - 2a^{\frac{1}{6}} + 1) - a^{\frac{1}{2}}(a^{\frac{1}{2}} - 2)$, का मान, जब $a = 7$, है:

a) 7 b) 0

c) 1 d) $\sqrt{7}$

$(x+y+z)$

$x^3+y^3+z^3-3xyz$

$a=0 \rightarrow 1 \times 1 - 0 = 1$ $= a - 8a^{\frac{1}{2}} + 1 + 3 \cdot 2 \cdot a^{\frac{1}{2}}$

$a=1 \rightarrow (1+2+3+2+1)(1-2+1) - 1(1-2) = 0+1=1$

$(x^2+y^2+z^2-xy-yz-zx)$ $= a - 2a^{\frac{1}{2}} + 1 - a + 2a^{\frac{1}{2}}$

$= a^{\frac{2}{3}} + 4a^{\frac{1}{3}} + 1 + 2a^{\frac{1}{2}} + 2a^{\frac{1}{6}} - a^{\frac{1}{3}}$

$= a^{\frac{2}{3}} + 3a^{\frac{1}{3}} + 2a^{\frac{1}{2}} + 2a^{\frac{1}{6}} + 1$

$x+y=1$

$\Rightarrow x^2+y^2+2xy=1$

$\Rightarrow x^2+y^2=1-2xy$

$\Rightarrow x^4+y^4+2x^2y^2=1+4x^2y^2-4xy$

$\Rightarrow x^4+y^4=1+2x^2y^2-4xy$

$=1+2xy(xy-2)$

12

$=1+24=25$

S38. If $x+y=1$ and $xy(xy-2)=12$, then the value of x^4+y^4 is:

HW

यदि $x+y=1$ और $xy(xy-2)=12$, तो x^4+y^4 का मान:

a) 19 b) 20

c) 25 c) 23

539. If $\frac{(4x-3)}{x}+\frac{(4y-3)}{y}+\frac{(4z-3)}{z}=0$ then the value of $\frac{1}{x}+\frac{1}{y}+\frac{1}{z}$ is

HW

अगर $\frac{(4x-3)}{x}+\frac{(4y-3)}{y}+\frac{(4z-3)}{z}=0$ है तो $\frac{1}{x}+\frac{1}{y}+\frac{1}{z}$=?

a) 9 b) 3 c) 4 d) 6

$$\frac{4x}{x}-\frac{3}{x}+\frac{4y}{y}-\frac{3}{y}+\frac{4z}{z}-\frac{3}{z}=0$$

$$\Rightarrow \quad 12 = 3\left(\frac{1}{x}+\frac{1}{y}+\frac{1}{z}\right)$$

$$\Rightarrow \quad 4 = \frac{1}{x}+\frac{1}{y}+\frac{1}{z}$$

540. If $\frac{3-5x}{2x}+\frac{3-5y}{2y}+\frac{(3-5z)}{2z}=0$, the the value of $\frac{2}{x}+\frac{2}{y}+\frac{2}{z}$

HW अगर $\frac{3-5x}{2x}+\frac{3-5y}{2y}+\frac{(3-5z)}{2z}=0$ है तो $\frac{2}{x}+\frac{2}{y}+\frac{2}{z}$ का मान:

a) 20 b) 10 c) 5 d) 15

$$\frac{3}{2x}-\frac{5x}{2x}+\frac{3}{2y}-\frac{5y}{2y}+\frac{3}{2z}-\frac{5z}{2z}=0$$

$$\Rightarrow \frac{3}{2}\left(\frac{1}{x}+\frac{1}{y}+\frac{1}{z}\right)=3\times\frac{5}{2}=\frac{15}{2}\ 5$$

$$\Rightarrow \frac{2}{x}+\frac{2}{y}+\frac{2}{z}=10$$

541. If $a + b + c + d = 4$ then the value of $\frac{1}{(1-a)(1-b)(1-c)} + \frac{1}{(1-b)(1-c)(1-d)} + \frac{1}{(1-a)(1-c)(1-d)} + \frac{1}{(1-a)(1-b)(1-d)}$ is

HW

यदि $a + b + c + d = 4$ हो तो $\frac{1}{(1-a)(1-b)(1-c)} + \frac{1}{(1-b)(1-c)(1-d)} + \frac{1}{(1-a)(1-c)(1-d)} + \frac{1}{(1-a)(1-b)(1-d)}$ का मान बताइए ।

a) 0 b) 1 c) 4 d) $1 + abcd$

$$\frac{1-d + 1-a + 1-b + 1-c}{(1-a)(1-b)(1-c)(1-d)} = \frac{4-(a+b+c+d)}{(1-a)(1-b)(1-c)(1-d)} = 0$$

542. $(3x-2y):(2x+3y)=5:6$, then one of the value of $\left(\frac{\sqrt[3]{x}+\sqrt[3]{y}}{\sqrt[3]{x}-\sqrt[3]{y}}\right)^2$

HW

अगर $(3x-2y):(2x+3y)=5:6$ है तो $\left(\frac{\sqrt[3]{x}+\sqrt[3]{y}}{\sqrt[3]{x}-\sqrt[3]{y}}\right)^2$ =?

a) $\frac{1}{25}$ b) 5 c) $\frac{1}{5}$ ~~d) 25~~

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

$$\Rightarrow 18x-12y=10x+15y$$

$$\Rightarrow 8x=27y$$

$$\Rightarrow \frac{x}{y}=\frac{27}{8}$$

$$\Rightarrow \frac{\sqrt[3]{x}}{\sqrt[3]{y}}=\frac{3}{2}$$

C&D

$$\frac{\sqrt[3]{x}+\sqrt[3]{y}}{\sqrt[3]{x}-\sqrt[3]{y}}=\frac{3+2}{3-2}=5$$

543. If $3a^2 = b^2 \neq 0$, then the value of $\frac{\left((a+b)^3-(a-b)^3\right)}{(a+b)^2+(a-b)^2} = ?$

HW

अगर $3a^2 = b^2 \neq 0$ है तो $\frac{\left((a+b)^3-(a-b)^3\right)}{(a+b)^2+(a-b)^2} = ?$

a) $\frac{3b}{2}$ b) b c) $\frac{b}{2}$ d) $\frac{2b}{3}$

$(a+b)^3 = a^3 + b^3 + 3a^2b + 3ab^2$

$-(a-b)^3 = -a^3 + b^3 - 3a^2b + 3ab^2$

$= 2b^3 + 6a^2b$

$\frac{2b(b^2+3a^2)}{2(a^2+b^2)}$

put $b^2 = 3a^2$ $\longrightarrow$ $= \frac{2b(6a^2)}{2 \times 4a^2} = \frac{3}{2}b$

Sol. If $x^3 - 4x^2 + 19 = 6(x-1)$, then what is the value of $\left[x^2 + \frac{1}{x-4}\right]$?

HW यदि $x^3 - 4x^2 + 19 = 6(x-1)$ है, तो $\left[x^2 + \frac{1}{x-4}\right]$ का मान क्या है?

a) 3 b) 5 ~~c) 6~~ d) 8

$x^3 - 4x^2 = 6x - 24$

put value

$$\frac{x^3 - 4x^2 + 1}{x-4}$$

$$= \frac{6x - 24}{x-4} = 6$$

545. If $\left(\frac{x}{a}\right)+\left(\frac{y}{b}\right)=3$ *and* $\left(\frac{x}{b}\right)-\left(\frac{y}{a}\right)=9$ then what is the value of $\frac{x}{y}$?

HW यदि $\left(\frac{x}{a}\right)+\left(\frac{y}{b}\right)=3$ तथा $\left(\frac{x}{b}\right)-\left(\frac{y}{a}\right)=9$ है, तो $\frac{x}{y}$ का मान क्या है?

a) $\frac{b+3a}{a-3b}$ ✓ b) $\frac{a+3b}{b-3a}$ ↓ c) $\frac{1+3a}{a+3b}$ d) $\frac{a+3b^2}{b-3a^2}$

$3 \times (bx+ay=3ab)$ $\quad ax-by=9ab$

$3bx+3ay=9ab$

Comparing values of $9ab$;

$3bx+3ay=ax-by$

$\Rightarrow (3a+b)y=(a-3b)x$

$\Rightarrow \frac{3a+b}{a-3b}=\frac{x}{y}$

SSC CGL T2, 18 Feb 2018

546. If $\frac{p}{x}+\frac{q}{y}=m$ and $\frac{q}{x}+\frac{p}{y}=n$, then what is $\frac{x}{y}$ equal to?

(HW) यदि $\frac{p}{x}+\frac{q}{y}=m$ और $\frac{q}{x}+\frac{p}{y}=n$ है, तो $\frac{x}{y}$ किसके बराबर है ?

a) $\frac{np+mq}{mp+nq}$ b) $\frac{np+mq}{mp-nq}$ c) $\frac{np-mq}{mp-nq}$ d) $\frac{np-mq}{mp+nq}$

$py+qx=mxy$ $\quad qy+px=nxy$

Comparing value of xy,

$$\frac{py+qx}{m}=\frac{qy+px}{n}$$

$$\Rightarrow npy+nqx=mqy+mpx$$

$$\Rightarrow (nq-mp)x=(mq-np)y$$

$$\Rightarrow \frac{x}{y}=\frac{mq-np}{nq-mp}=\frac{np-mq}{mp-nq}$$

CDS 14 Feb 2016

$m x^m = n x^n$

$\Rightarrow x^m = \frac{n}{m} x^n$

putting this value in

$$\frac{1}{\frac{n}{m}x^n + x^n} + \frac{1}{\frac{n}{m}x^n - x^n}$$

$$= \frac{m}{(n+m)x^n} + \frac{m}{(n-m)x^n}$$

$$= \frac{m}{x^n}\left(\frac{1}{n+m} + \frac{1}{n-m}\right) = \frac{m}{x^n} \times \frac{2n}{(n^2-m^2)}$$

HW

547. If $mx^m - nx^n = 0$ then what is the value of $\frac{1}{x^m+x^n} + \frac{1}{x^m-x^n}$ in terms of x^n ?

यदि $mx^m - nx^n = 0$ है, तो x^n पदों में $\frac{1}{x^m+x^n} + \frac{1}{x^m-x^n}$ का मान क्या है?

a) $\frac{2m}{x^n(m^2-n^2)}$

b) $\frac{2mn}{x^n(m^2-n^2)}$

c) $\frac{2mn}{x^n(m^2+n^2)}$

d) $\frac{2mn}{x^n(n^2-m^2)}$

Numerator/अंश में decimal after 6
denomin/हर में " " 6
so cancelled.

548. (HW) The $\overset{a}{0.325}\times\overset{a}{0.325}+\overset{b}{0.175}\times\overset{b}{0.175}-\overset{2ab}{25\times0.00455}$ value of $\dfrac{}{5\times0.0065\times3.25-7\times0.175\times0.025}$ lies between:

$\dfrac{0.325\times0.325+0.175\times0.175-25\times0.00455}{5\times0.0065\times3.25-7\times0.175\times0.025}$ का मान इनके बीच स्थित है:

a) 0.25 and 0.35
b) 0.35 and 0.45
c) 0.21 and 0.31
d) 0.45 and 0.55

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

$$=\frac{325-175}{325+175}=\frac{\overset{3}{\cancel{150}}}{\cancel{500}}=.3$$