gradeup

Sahi Prep Hai Toh Life Set Hai

Doubt Session

Post a Doubt →

INSTRUCTIONS FOR ATTACHING DOUBTS FOR FURTHER DOUBT SESSION

- If a doubt is not attached properly, it will not taken in the class.
- None of the question which is discussed in class will be taken in doubt session, if you haven't revised the class.
- Without options and without mentioning which option is correct, no doubts will be entertained.
- Maximum numbers of doubts, a student can ask in doubt session is 5.
- Please send all your doubts atleast 24 hours before Doubt Class.

Q. If $x^3 + y^3 + z^3 = 3(1 + xyz)$, $P = y + z - x$

$Q = z + x - y$, $R = x + y - z$, then what is the value of $P^3 + Q^3 + R^3 - 3PQR$ = ?

(a) 9 (b) 8

(c) 12 (d) 6

I Putting values

$y = 0, \quad z = 0$

$x^3 = 3$

$P = -x$

$Q = x$

$R = x$

$-x^3 + x^3 + x^3 + 3x^3$

$4x^3$

Q. If $a + b + c = 4\sqrt{3}$ and $a^2 + b^2 + c^2 = 16$ then $a : b : c = ?$

(a) 1 : 1 : 1

(b) $1 : \sqrt{2} : \sqrt{3}$

(c) 1 : 2 : 3

(d) None of these

Sum

Check $3a = 4\sqrt{3}$

$a = 4/\sqrt{3}$

$16 \cdot x = 16$

Q33. If $x_1x_2x_3 = 4\,(4 + x_1 + x_2 + x_3)$ then what is the value of $\frac{1}{(2+x_1)} + \frac{1}{(2+x_2)} + \frac{1}{(2+x_3)}$

(a) 1 (b) $\frac{1}{2}$

(c) 2 (d) $\frac{1}{3}$

I Putting values

$x_1 = x_2 = x_3 = 4$

$64 = 4(4+4+4+4)$

$\frac{1}{6} + \frac{1}{6} + \frac{1}{6}$

$x_1 \cdot x_2 \cdot x_3 = 4(4 + x_1 + x_2 + x_3)$

$$\frac{1}{2+x_1} + \frac{1}{2+x_2} + \frac{1}{2+x_3}$$

$$\rightarrow \frac{(2+x_2)(2+x_3) + (2+x_1)(2+x_3) + (2+x_1)(2+x_2)}{(2+x_1)(2+x_2)(2+x_3)}$$

$$\rightarrow \frac{12 + 4(x_1+x_2+x_3) + x_1x_3 + x_2x_3 + x_1x_2}{(4 + 2x_2 + 2x_1 + x_1x_2)(2+x_3)}$$

$$\rightarrow \frac{12 + 4(x_1+x_2+x_3) + x_1x_3 + x_2x_3 + x_1x_2}{8 + 4x_3 + 4x_2 + 2x_2x_3 + 4x_1 + 2x_1x_3 + 2x_1x_2 + x_1x_2x_3 + 4x_1 + 4x_2 + 4x_3}$$

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

Q35. If $a^2 + b^2 + 9 - 6b + (a + b - 4)^2 = 2ab - 6a$, then find ab = ??

(a) 7/4 (b) -7/4

(c) 7/2 (d) 12

Time 90sec

Sol^n

$a^2 + b^2 + 9 - 6b - 2ab + 6a + (a+b-4)^2 = 0$

$(a - b + 3)^2 + (a+b-4)^2 = 0$

$a - b = -3$

$a + b = 4$

$a = 1/2 \quad b = 7/2$

$\frac{1}{2} \cdot \frac{7}{2}$

$$\frac{1}{x+1} + \frac{2}{x+2} + \frac{3}{x+3} + \cdots \frac{1007}{x+1007} = 1249 \quad (1)$$

$$\frac{x}{x+1} + \frac{x}{x+2} + \cdots \frac{x}{x+1007} = k \quad (2)$$

(1) + (2)

$$1007 = 1249 + k$$

$$k = -242$$

If 1/(X+1) + 2/(X+2) + 3/(X+3) +.....+ 1007/(X+1007)= 1249 Find the value of x[1/(X+1) + 1/(X+2) + 1/(X+3) +...+ 1/(X+1007)]

Quiz

15% 422

32% −422

51% −242

2% 242

Q28. If $p^x = r^y = m$ and $r^w = p^z = n$, then which one of the following is correct ?

Time 90sec

(a) $xw = yz$
(b) $xz = yw$
(c) $x+y = w+z$
(d) $x-y = w-z$

$p^x = r^y = m$

$p = m^{1/x}$ $\quad r = m^{1/y}$

$(m^{1/y})^w = (m^{1/x})^z$

$\frac{w}{y} = \frac{z}{x}$

$xw = yz$

Q34. If $5x + \left[\frac{1}{(7x)}\right] = 9$, what is the value of $\frac{7x}{35x^2+35x+1}$?

(a) 1/14
(b) 1/63
(c) 1/98
(d) 7/14

$35x^2 + 1 = 63x$

$\frac{7x}{63x+35x}$

$\frac{1}{7x}$

$\frac{1}{98x}$

Q29. If $a^x = b$, $b^y = c$ and $xyz = 1$, then what is c^z equal to?

Time 60sec

(a) a
(b) b
(c) ab
(d) a/b

$(a^x)^y = c$

$a^{xy} = c^1$

$a^{xyz} = c^z$

$a^1 = c^z$

Q6. If $a^x = (x + y + z)^y$, $a^y = (x + y + z)^z$ and $a^z = (x + y + z)^x$, then $x + y + z = ?$ $(a \neq 0)$

(a) 0 (b) 1
(c) a^3 (d) a

$a^x = (x+y+z)^y$ — (1)

$a^y = (x+y+z)^z$ — (2)

$a^z = (x+y+z)^x$ — (3)

$a^{x+y+z} = (x+y+z)^{x+y+z}$

$a = x+y+z$

$\frac{b-c}{a}+\frac{a+c}{b}+\frac{a-b}{c}=1$

Q4. If $\frac{b-c}{a}+\frac{a+c}{b}+\frac{a-b}{c}=1$ and $(a-b+c)\neq 0$ then

2 min

(a) $\frac{1}{c}=\frac{1}{a}+\frac{1}{b}$ (b) $\frac{1}{a}=\frac{1}{b}+\frac{1}{c}$

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

$\left(\frac{b-c}{a}-1\right)+\left(\frac{a+c}{b}-1\right)+\left(\frac{a-b}{c}+1\right)=0$

$\left(\frac{b-c-a}{a}\right)+\frac{a+c-b}{b}+\frac{a-b+c}{c}$

$\frac{a-b+c}{}\left[\frac{-1}{a}+\frac{1}{b}+\frac{1}{c}\right]$

$\frac{-1}{a}+\frac{1}{b}+\frac{1}{c}=0$

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

Q36. If a + b = 48 – ab, b + c = 99 – bc and c + a = 3 – ca where a, b and c are positive number then find 7c – 15a + b = ?

2 min

(a) 38

(b) 41

(c) 43

(d) 35

$1+a+b+ab = 48+1$

$1+b+c+bc = 99+1$

$1+c+a+ac = 3+1$

$(1+a)(1+b) = 49$ — (1)

$(1+b)(1+c) = 100$ — (2)

$(1+c)(1+a) = 4$ — (3)

$[(1+a)(1+b)(1+c)]^2 = 49 \cdot 100 \cdot 4$

$(1+a)(1+b)(1+c) = 140$

$1+b = 35$

$(1+c) = \frac{100 \times 2}{25} = 7$

$(1+a) = \frac{49 \times 7}{35} = 5$

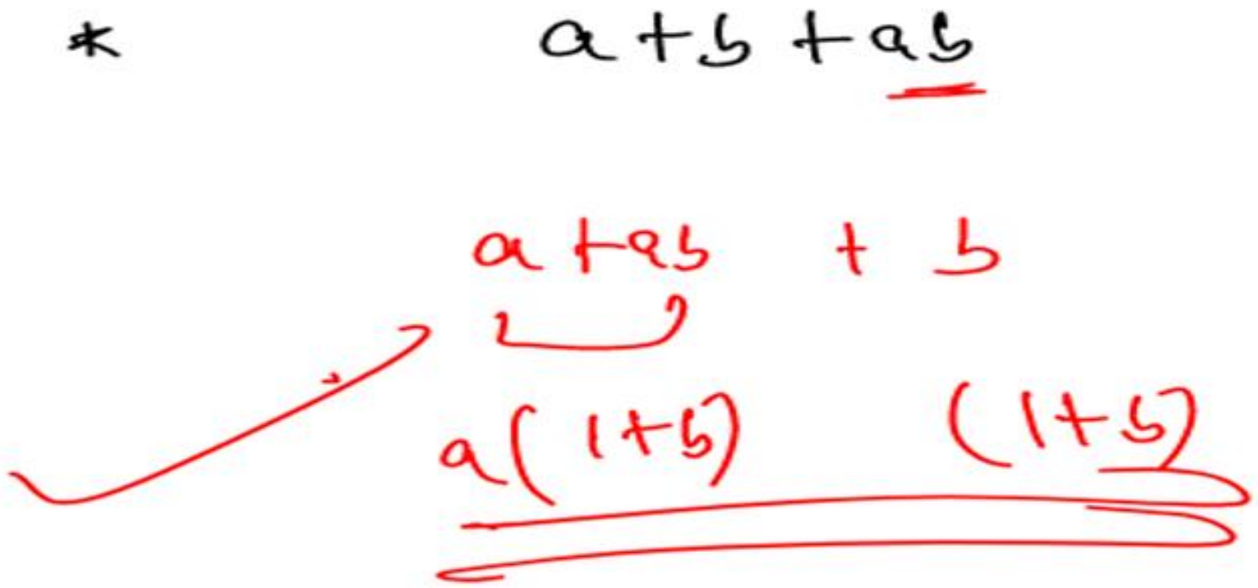
$b = 34$

$c = \frac{13}{7}$

$a = \frac{2}{5}$

$13 - 6 + 34$

Ans. (b)



Q37. If $(2.9)^x = (841)^y = 1000$, find $\frac{xy}{x-2y} = ?$

(a) 1/2 (b) 2

(c) 1/3 (d) −1/4

$2.9 = (1000)^{\frac{1}{x}}$ — (1)

$(29)^{24} = 1000$

$29 = (1000)^{1/24}$ — (2)

(2) ÷ (1)

$10 = (1000)^{\frac{1}{24}-\frac{1}{x}}$

$10^1 = \left[(10)^3\right]^{\frac{1}{24}-\frac{1}{x}}$

$\frac{1}{3} = \frac{1}{24} - \frac{1}{x}$

$\frac{1}{3} = \frac{x-24}{24x}$

$\frac{2}{3} = \frac{x-24}{xy}$

$\frac{3}{2} = \frac{xy}{x-24}$

Ans. (b)

Q39. If $x^2 - 4x + 1 = 0$, find $x^9 + x^7 - 194x^5 - 194x^3 = ?$

(a) -2 (b) -4

(c) 0 (d) 1

$x^2 - 4x + 1 = 0$

$x + \frac{1}{x} = 4$

$x^2 + \frac{1}{x^2} = 14$

$x^4 + \frac{1}{x^4} = 194$

$x^9 + x^7 - \left(x^4 + \frac{1}{x^4}\right)\left(x^5 + x^3\right)$

$x^9 + x^7 - \left[x^9 + x^7 + x + \frac{1}{x}\right]$

$= -\left[x + \frac{1}{x}\right] = -4$

Ans. (b)

Hint $\frac{a^3-b^3}{a-b} = a^2+ab+b^2$

Q40. If $\frac{8(x+y)^3-27(x-y)^3}{5y-x} = Ax^2+Bxy+Cy^2$

then find the value of (A + B + C) = ?

(a) 26 (b) 19

(c) 16 (d) 13

$\frac{[2(x+y)]^3-[3(x-y)]^3}{2x+2y-3x+3y}$

$= 4(x+y)^2 + 6(x^2-y^2) + 9(x-y)^2$

$= 19x^2 - 10xy + 7y^2$

A = 19

B = -10

C = 7

Ans. (c)

$$\frac{4\sqrt{3}+5\sqrt{2}}{4\sqrt{3}+3\sqrt{2}} \times \frac{4\sqrt{3}-3\sqrt{2}}{4\sqrt{3}-3\sqrt{2}}$$

$$\frac{48-12\sqrt{6}+20\sqrt{6}-30}{48-18}$$

$$\frac{18+8\sqrt{6}}{30} = \frac{3}{5}+\frac{4\sqrt{6}}{15}$$

Q17. If $\frac{4\sqrt{3}+5\sqrt{2}}{\sqrt{48}+\sqrt{18}} = a + b\sqrt{6}$, then the values of a and b are

(a) $\frac{9}{15}, \frac{-4}{15}$

(b) $\frac{3}{11}, \frac{4}{33}$

(c) $\frac{9}{10}, \frac{2}{5}$

(d) $\frac{3}{5}, \frac{4}{15}$

Ans. (d)

Q22. If $\frac{p}{(b-c)(b+c-2a)} = \frac{q}{(c-a)(c+a-2b)} = \frac{r}{(a-b)(a+b-2c)} = k$

Find p + q + r

(a) 0 (b) 1

(c) −1 (d) 2

$p = k(b-c)(b+c-2a)$

$q = k(c-a)(c+a-2b)$

$r = k(a-b)(a+b-2c)$

$p+q+r = k[b^2-c^2+c^2-a^2+a^2-b^2-2ab+2ac-2bc+2ba-2ca+2cb]$

$= 0$

Ans. (a)