CDS-AFCAT 2 2024

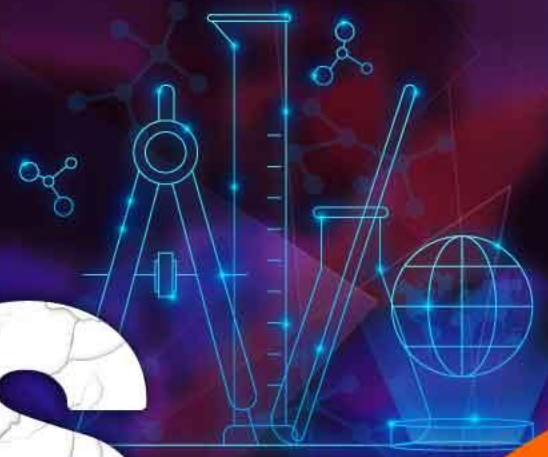
SSBCrack EXAMS

LIVE

MATHS

ALGEBRA

CLASS 3



NAVJYOTI SIR

SSBCrack EXAMS

10 June 2024 Live Classes Schedule

8:00AM	10 JUNE 2024 DAILY CURRENT AFFAIRS	RUBY MA'AM

SSB INTERVIEW LIVE CLASSES

9:00AM	OVERVIEW OF TAT & WAT	ANURADHA MA'AM

AFCAT 2 2024 LIVE CLASSES

4:00PM	MATHS - ALGEBRA - CLASS 3	NAVJYOTI SIR
5:30PM	ENGLISH - FILL IN THE BLANKS - CLASS 1	ANURADHA MA'AM

NDA 2 2024 LIVE CLASSES

11:30AM	GK - BIOGEOGRAPHY	RUBY MA'AM
2:30PM	GS - CHEMISTRY - CLASS 1	SHIVANGI MA'AM
5:30PM	ENGLISH - FILL IN THE BLANKS - CLASS 1	ANURADHA MA'AM
6:30PM	MATHS - BINOMIAL THEOREM - CLASS 1	NAVJYOTI SIR

CDS 2 2024 LIVE CLASSES

11:30AM	GK - BIOGEOGRAPHY	RUBY MA'AM
2:30PM	GS - CHEMISTRY - CLASS 1	SHIVANGI MA'AM
4:00PM	MATHS - ALGEBRA - CLASS 3	NAVJYOTI SIR
5:30PM	ENGLISH - FILL IN THE BLANKS - CLASS 1	ANURADHA MA'AM

Q) If $a+b+c=3$, $a^2+b^2+c^2=6$ and $\frac{1}{a}+\frac{1}{b}+\frac{1}{c}=1$, where a, b, c are all non-zero, then 'abc' is equal to

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

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

$\frac{bc+ac+ab}{abc}=1 \Rightarrow abc=bc+ab+ac$

Given, $(a+b+c)=3$; $(a^2+b^2+c^2)=6$

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

$(3)^2 = 6 + 2(ab+bc+ca)$

$abc = \frac{9-6}{2} = \frac{3}{2}$

Q) If $a+b+c=3$, $a^2+b^2+c^2=6$ and $\frac{1}{a}+\frac{1}{b}+\frac{1}{c}=1$, where a, b, c are all non-zero, then 'abc' is equal to

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

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

Ans: (b)

SSBCrack EXAMS

Q) If $x^2 + y^2 - 4x + 4y + 8 = 0$, then the value of $x - y$ is

(a) 4 (b) -4

(c) 0 (d) 8

$(x^2 - 4x + 4) + (y^2 + 4y + 4) = 0$

$(x-2)^2 + (y+2)^2 = 0$

$\Rightarrow (x-2)^2 = 0$ and $(y+2)^2 = 0$

$x = 2$ $y = -2$

$x - y$

$= 2 - (-2) = 4$

Q) If $x^2 + y^2 - 4x + 4y + 8 = 0$, then the value of $x - y$ is

(a) 4 (b) -4

(c) 0 (d) 8

Ans: (c)

Q) What is the simplified form of

$$\left(\frac{x^2-3x+2}{x^3-8}\right)\div\left(\frac{x^2-9}{x^2+7x+12}\right)\times\left(\frac{x^3+2x^2+4x}{x^2+3x-4}\right)?$$

(a) $\frac{x}{x-3}$ ✓ (b) $\frac{x-2}{x-3}$

(c) $\frac{x}{x+3}$ (d) $\frac{x+3}{x+4}$

$x^2-3x+2 \quad 1\times 2$

$x^2-x-2x+2=0$ (2)

$(x-1)(x-2)=0$

$$\frac{x^2-3x+2}{x^3-8}\times\frac{x^2+7x+12}{x^2-9}\times\frac{(x^3+2x^2+4x)}{x^2+3x-4}$$

$$\frac{(x-1)(x-2)}{(x-2)(x^2+2x+4)}\times\frac{(x+3)(x+4)}{(x+3)(x-3)}\times\frac{x(x^2+2x+4)}{(x+4)(x-1)}=\left(\frac{x}{x-3}\right)$$ ✓

Q) What is the simplified form of

$$\left(\frac{x^2-3x+2}{x^3-8}\right)\div\left(\frac{x^2-9}{x^2+7x+12}\right)\times\left(\frac{x^3+2x^2+4x}{x^2+3x-4}\right)?$$

(a) $\frac{x}{x-3}$

(b) $\frac{x-2}{x-3}$

(c) $\frac{x}{x+3}$

(d) $\frac{x+3}{x+4}$

Ans: (a)

SSBCrack EXAMS

Q) If $a = 3 + 2\sqrt{2}$, then the value of $\dfrac{a^6 + a^4 + a^2 + 1}{a^3}$ is

(a) 192 (b) 240 (c) 204 (d) 204

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

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

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

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

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

$= 6$

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

$a^3 + a + \frac{1}{a} + \frac{1}{a^3}$

$\left(a^3 + \frac{1}{a^3}\right) + \left(a + \frac{1}{a}\right) = \left(a + \frac{1}{a}\right)^3 - 3\left(a + \frac{1}{a}\right) + \left(a + \frac{1}{a}\right)$

$\left(a + \frac{1}{a}\right)^3 = a^3 + \frac{1}{a^3} + 3a\left(\frac{1}{a^2}\right) + 3(a)^2\frac{1}{a}$

$\left(a + \frac{1}{a}\right)^3 - 2\left(a + \frac{1}{a}\right)$

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

$= 216 - 12 = 204$

Q) If $a = 3 + 2\sqrt{2}$, then the value of $\frac{a^6 + a^4 + a^2 + 1}{a^3}$ is

(a) 192 (b) 240 (c) 204 (d) 212

Ans: (c)

SSBCrack EXAMS

Q) If $x = 3 + 2\sqrt{2}$, then the value of $\left(\sqrt{x} - \frac{1}{\sqrt{x}}\right)$ is

(a) 1 (b) 2

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

$x = 1^2 + (\sqrt{2})^2 + 2 \times 1 \times \sqrt{2}$

$x = (1+\sqrt{2})^2$

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

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

$\sqrt{x} - \frac{1}{\sqrt{x}}$

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

$1 + 1 = 2$

Q) If $x = 3 + 2\sqrt{2}$, then the value of $\left(\sqrt{x} - \frac{1}{\sqrt{x}}\right)$ is

(a) 1

(b) 2

(c) $2\sqrt{2}$

(d) $3\sqrt{3}$

Ans: (b)

$\frac{c}{a} = 9$; $\frac{b}{a} = -10$

Q) In solving a problem, one student makes a mistake in the coefficient of the first degree term and obtains –9 and –1 for the roots. Another student makes a mistake in the constant term of the equation and obtains 8 and 2 for the roots. The correct equation was

(a) $x^2 + 10x + 9 = 0$ (b) $x^2 - 10x + 16 = 0$

(c) $x^2 - 10x + 9 = 0$ (d) None of these

$x^2 - 10x + 9 = 0$

(Let $a = 1$, $\Rightarrow b = -10$, $c = 9$)

$ax^2 + bx + c = 0$

$-9, -1$ | $\alpha\beta = \frac{c}{a} \Rightarrow \alpha\beta = \frac{c}{a} = (-9)(-1) = 9$

$ax^2 + bx + c = 0$

$x^2 - (\alpha+\beta)x + \alpha\beta = 0$

$8, 2$ | $\alpha+\beta = \frac{-b}{a} \Rightarrow \frac{-b}{a} = 10$

$x^2 - \left(\frac{-b}{a}\right)x + \frac{c}{a} = 0$

Q) In solving a problem, one student makes a mistake in the coefficient of the first degree term and obtains –9 and –1 for the roots. Another student makes a mistake in the constant term of the equation and obtains 8 and 2 for the roots. The correct equation was

(a) $x^2 + 10x + 9 = 0$ (b) $x^2 - 10x + 16 = 0$

(c) $x^2 - 10x + 9 = 0$ (d) None of these

Ans: (c)

Q) For what value of k, will the roots of the equation $kx^2 - 5x + 6 = 0$ be in the ratio of 2 : 3?

(a) 0 (b) 1

(c) −1 (d) 2

(α, β)

$\alpha + \beta = \frac{5}{k}$ — (1) $\quad \alpha\beta = \frac{6}{k}$ — (2)

$\frac{\alpha}{\beta} = \frac{2}{3} \Rightarrow \alpha = \frac{2}{3}\beta$

eqn (1), $\frac{2}{3}\beta + \beta = \frac{5}{k} \Rightarrow \beta = \frac{5}{k} \times \frac{3}{5} = \frac{3}{k}$

$\beta = \frac{3}{k}$

$\alpha = \frac{2}{k}$

eqn (2),

$\left(\frac{3}{k}\right)\left(\frac{2}{k}\right) = \frac{6}{k}$

$\frac{6}{k^2} = \frac{6}{k}$

$6k = 6k^2$

$6k^2 - 6k = 0$

$(6k)(k-1) = 0$

$6k = 0$ $\quad k - 1 = 0$

$k = 0$, $k = 1$

(k cannot be zero as coeff. of x^2)

Q) For what value of k, will the roots of the equation $kx^2 - 5x + 6 = 0$ be in the ratio of 2 : 3?

(a) 0 (b) 1

(c) −1 (d) 2

Ans: (b)

Q) $\frac{a}{1-a}+\frac{b}{1-b}+\frac{c}{1-c}=1$, then find the value of

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

(a) 1 (b) 2

(c) 3 (d) 4

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

$$\frac{1}{1-a}+\frac{1}{1-b}+\frac{1}{1-c}=4$$

Q) $\frac{a}{1-a}+\frac{b}{1-b}+\frac{c}{1-c}=1$, then find the value of

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

(a) 1
(b) 2
(c) 3
(d) 4

Ans: (d)

Q) If $x = b + c - 2a$, $y = c + a - 2b$, $z = a + b - 2c$, then the value of $x^2 + y^2 - z^2 + 2xy$ is

(a) 0 (b) $a + b + c$

(c) $a - b + c$ (d) $a + b - c$

$x^2 + y^2 - z^2 + 2xy$

$(x+y)^2 - z^2$

$(x+y+z)(x+y-z)$

$(0+0+0) = 0$

Q) If $x = b + c - 2a$, $y = c + a - 2b$, $z = a + b - 2c$, then the value of $x^2 + y^2 - z^2 + 2xy$ is

(a) 0

(b) $a + b + c$

(c) $a - b + c$

(d) $a + b - c$

Ans: (a)

Q) If $a+b+c=8$, then the value of

$(a-4)^3+(b-3)^3+(c-1)^3-3(a-4)(b-3)(c-1)$ is

(a) 2 (b) 4

(c) 1 (d) 0

Let $A = a-4$, $B = b-3$, $C = c-1$

$A+B+C = (a-4)+(b-3)+(c-1)$

$= a+b+c-8 = 8-8 = 0$

$A^3+B^3+C^3-3ABC = (A+B+C)(A^2+B^2+C^2-AB-BC-CA)$

$= 0$

Q) If $a+b+c=8$, then the value of

$(a-4)^3+(b-3)^3+(c-1)^3-3(a-4)(b-3)(c-1)$ is

(a) 2 (b) 4

(c) 1 (d) 0

Ans: (d)

Q) If $a = \sqrt{6}+\sqrt{5}$ $b = \sqrt{6}-\sqrt{5}$ then $2a^2 - 5ab + 2b^2 =$

(a) 38 (b) 39

(c) 40 (d) 41

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

$2(a-b)^2 - ab$

$(a-b) = 2\sqrt{5}$

$ab = 6-5 = 1$

$\Rightarrow 2(2\sqrt{5})^2 - 1$

$= 2 \times 20 - 1 = 39$

Q) If $a = \sqrt{6} + \sqrt{5}$ $b = \sqrt{6} - \sqrt{5}$ then $2a^2 - 5ab + 2b^2 =$

(a) 38 (b) 39

(c) 40 (d) 41

Ans: (b)

Q) If $x + \frac{4}{x} = 4$, find the value of $x^3 + \frac{4}{x^3}$.

(a) 8

(b) $8\frac{1}{2}$

(c) 16

(d) $16\frac{1}{2}$

$x^2 + 4 = 4x$

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

$(x-2)^2 = 0 \Rightarrow x = 2$

$2^3 + \frac{4}{2^3} = 8 + \frac{4}{8} = 8 + \frac{1}{2} = 8\frac{1}{2}$

Q) If $x + \frac{4}{x} = 4$, find the value of $x^3 + \frac{4}{x^3}$.

(a) 8

(b) $8\frac{1}{2}$

(c) 16

(d) $16\frac{1}{2}$

Ans: (b)

Q) If $x+y+z=11, x^2+y^2+z^2=133$ and $x^3+y^3+z^3=881$, then the value of $\sqrt[3]{xyz}$ is:

(a) -6 (b) 6 (c) -8 (d) 8

$$x^3+y^3+z^3-3xyz=(x+y+z)(x^2+y^2+z^2-xy-yz-zx)$$

$$(x+y+z)^2=x^2+y^2+z^2+2(xy+yz+zx)$$

$$11^2=133+2(xy+yz+zx)$$

$$\frac{121-133}{2}=xy+yz+zx$$

$$\Rightarrow xy+yz+zx=-6 \checkmark$$

$$881-3xyz=11(133-(-6))$$

$$xyz=\frac{881-1529}{3}$$

$$xyz=\frac{648}{3}=-216$$

139

$$\sqrt[3]{xyz}=-6$$

Q) If $x+y+z=11, x^2+y^2+z^2=133$ and $x^3+y^3+z^3=881$, then the value of $\sqrt[3]{xyz}$ is:

(a) -6 (b) 6 (c) -8 (d) 8

Ans: (a)

Q) If α and β are the roots of the equation $x^2 - 6x + 6 = 0$, what is $\alpha^3 + \beta^3 + \alpha^2 + \beta^2 + \alpha + \beta$ equal to?

(a) 150 (b) 138
(c) 138 (d) 124

$\alpha + \beta = \frac{-(-6)}{1}$ $\quad \alpha\beta = 6$

$\alpha + \beta = 6$; $\alpha\beta = 6$

$\alpha^3 + \beta^3 + \alpha^2 + \beta^2 + \alpha + \beta$

$\left[(\alpha+\beta)^3 - 3(\alpha+\beta)\right] + \left[(\alpha+\beta)^2 - 2\alpha\beta\right] + (\alpha+\beta)$

$6^3 - 3\times6 + 6^2 - 2\times6 + 6$

$216 - 18 + 36 - 12 + 6$

$= 228$

Q) If α and β are the roots of the equation $x^2 - 6x + 6 = 0$, what is $\alpha^3 + \beta^3 + \alpha^2 + \beta^2 + \alpha + \beta$ equal to?

(a) 150
(b) 138
(c) 138
(d) 124

Ans: (b)

Q) If $P = 7 + 4\sqrt{3}$ and $PQ = 1$, then what is the value of $1/P^2 + 1/Q^2$?

(a) 196 (b) 194 (c) 206 (d) 182

$(7+4\sqrt{3})Q = 1$

$Q = \frac{1}{7+4\sqrt{3}} = \frac{7-4\sqrt{3}}{(7)^2-(4\sqrt{3})^2} = \frac{7-4\sqrt{3}}{49-48} = 7-4\sqrt{3}$

$\frac{1}{P^2} + \frac{1}{Q^2} = \frac{P^2+Q^2}{P^2Q^2} = \frac{(P+Q)^2-2PQ}{(PQ)^2} = \frac{(14)^2-1\times2}{(1)} = 196-2 = 194$

Q) If $P = 7 + 4\sqrt{3}$ and $PQ = 1$, then what is the value of $1/P^2 + 1/Q^2$?

(a) 196 (b) 194 (c) 206 (d) 182

Ans: (b)

Q) If $x + y + z = 0$, then what is the value of $(3y^2 + x^2 + z^2)/(2y^2 - xz)$?

(a) 2 (b) 1 (c) 3/2 (d) 5/3

Q) If $x + y + z = 0$, then what is the value of $(3y^2 + x^2 + z^2)/(2y^2 - xz)$?

(a) 2 (b) 1 (c) 3/2 (d) 5/3

Ans: (a)

Q) If $a^2 + b^2 + c^2 + 96 = 8(a + b - 2c)$, then $\sqrt{ab - bc + ca}$ is equal to:

(a) 6 (b) $2\sqrt{2}$ (c) 4 (d) $2\sqrt{3}$

Q) If $a^2 + b^2 + c^2 + 96 = 8(a + b - 2c)$, then $\sqrt{ab - bc + ca}$ is equal to:

(a) 6 (b) $2\sqrt{2}$ (c) 4 (d) $2\sqrt{3}$

Ans: (c)

Q) 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?

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

Q) 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?

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

Ans: (c)

Q) If $a+\frac{1}{b}=b+\frac{1}{c}=c+\frac{1}{a}$ (where $a \neq b \neq c$), then abc is equal to

(a) $+1$
(b) -1
(c) $+1$ & -1
(d) None of the options

Q) If $a+\frac{1}{b}=b+\frac{1}{c}=c+\frac{1}{a}$ (where $a \neq b \neq c$), then abc is equal to

(a) $+1$
(b) -1
(c) $+1$ & -1
(d) None of the options

Ans: (c)

Q) If $x-\sqrt{3}-\sqrt{2}=0$ and $y-\sqrt{3}+\sqrt{2}=0$ then value of $(x^3-20\sqrt{2})-(y^3+2\sqrt{2})$

(a) 3 (b) 2 (c) 0 (d) 1

Q) If $x-\sqrt{3}-\sqrt{2}=0$ and $y-\sqrt{3}+\sqrt{2}=0$ then value of $(x^3-20\sqrt{2})-(y^3+2\sqrt{2})$

(a) 3 (b) 2 (c) 0 (d) 1

Ans: (c)

Q) If $a+b+c+d=4$ then the value of

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

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

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

Q) If $a+b+c+d=4$ then the value of

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

$$+\frac{1}{(1-c)(1-d)(1-a)}+\frac{1}{(1-d)(1-a)(1-b)} \text{ is.}$$

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

Ans: (a)

Q) If $(x^3 - y^3) : (x^2 + xy + y^2) = 5 : 1$ and

$(x^2 - y^2) : (x - y) = 7 : 1$, then the ratio $2x : 3y$ equals

(a) $2 : 3$ (b) $4 : 1$ (c) $4 : 3$ (d) $3 : 2$

Q) If $(x^3 - y^3) : (x^2 + xy + y^2) = 5 : 1$ and

$(x^2 - y^2) : (x - y) = 7 : 1$, then the ratio $2x : 3y$ equals

(a) $2 : 3$ (b) $4 : 1$ (c) $4 : 3$ (d) $3 : 2$

Ans: (b)

Q) What fraction is that whose numerator being doubled and denominator increased by 7, the value becomes $\frac{2}{3}$, but when the denominator being doubled, and the numerator increased by 2, the value becomes $\frac{3}{5}$?

(a) 3/5 (b) 4/5 (c) 5/7 (d) 7/11

Q) What fraction is that whose numerator being doubled and denominator increased by 7, the value becomes $\frac{2}{3}$, but when the denominator being doubled, and the numerator increased by 2, the value becomes $\frac{3}{5}$?

(a) 3/5 (b) 4/5 (c) 5/7 (d) 7/11

Ans: (b)

Q) Farah got married 8 years ago. Today her age is $1\frac{2}{7}$ times her age at the time of her marriage. At present her daughter's age is one-sixth of her age. What was her daughter's age 3 years ago?

(a) 6 years
(b) 4 years
(c) 3 years
(d) None of these

Q) Farah got married 8 years ago. Today her age is $1\frac{2}{7}$ times her age at the time of her marriage. At present her daughter's age is one-sixth of her age. What was her daughter's age 3 years ago?

(a) 6 years
(b) 4 years
(c) 3 years
(d) None of these

Ans: (c)

Q) If x, y, z are the three factors of $a^3 - 7a - 6$, then value of $x + y + z$ will be

(a) 3a (b) 3 (c) 6 (d) a

Q) If x, y, z are the three factors of $a^3 - 7a - 6$, then value of $x + y + z$ will be

(a) 3a (b) 3 (c) 6 (d) a

Ans: (a)

Q) If $x = a^{1/2} + a^{-1/2}$, $y = a^{1/2} - a^{-1/2}$, then value of

$$(x^4 - x^2y^2 - 1) + (y^4 - x^2y^2 + 1)$$

(a) 16 (b) 14 (c) 12 (d) 13

Q) If $x = a^{1/2} + a^{-1/2}$, $y = a^{1/2} - a^{-1/2}$, then value of

$$(x^4 - x^2y^2 - 1) + (y^4 - x^2y^2 + 1)$$

(a) 16 (b) 14 (c) 12 (d) 13

Ans: (a)

Q) If $a + b = 1$, find the value of $a^3 + b^3 - ab - (a^2 - b^2)^2$

(a) 0 (b) 1 (c) –1 (d) 2

Q) If $a + b = 1$, find the value of $a^3 + b^3 - ab - (a^2 - b^2)^2$

(a) 0 (b) 1 (c) –1 (d) 2

Ans: (a)

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

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

Q) If $a + b + c = 0$, find the value of $\frac{a+b}{c} - \frac{2b}{c+a} + \frac{b+c}{a}$

(a) 0

(b) 1

(c) -1

(d) 2

Q) If $a + b + c = 0$, find the value of $\frac{a+b}{c} - \frac{2b}{c+a} + \frac{b+c}{a}$

(a) 0
(b) 1
(c) -1
(d) 2

Ans: (a)

Q) If $x^3 + y^3 + z^3 = 3(1 + xyz)$, $P = y + z - x$, $Q = z + x - y$ and $R = x + y - z$, then what is the value of $P^3 + Q^3 + R^3 - 3PQR$?

(a) 9 (b) 8 (c) 12 (d) 6

Q) If $x^3 + y^3 + z^3 = 3(1 + xyz)$, $P = y + z - x$, $Q = z + x - y$ and $R = x + y - z$, then what is the value of $P^3 + Q^3 + R^3 - 3PQR$?

(a) 9 (b) 8 (c) 12 (d) 6

Ans: (c)

Q) Which one is one of the factors of

$$x^2+\frac{1}{x^2}+8\left(x+\frac{1}{x}\right)+14\ ?$$

(a) $x+\frac{1}{x}+1$

(b) $x+\frac{1}{x}+3$

(c) $x+\frac{1}{x}+6$

(d) $x+\frac{1}{x}+7$

Q) Which one is one of the factors of

$$x^2+\frac{1}{x^2}+8\left(x+\frac{1}{x}\right)+14\ ?$$

(a) $x+\frac{1}{x}+1$

(b) $x+\frac{1}{x}+3$

(c) $x+\frac{1}{x}+6$

(d) $x+\frac{1}{x}+7$

Ans: (c)

Q) The value of k for which

$$x + 2y + 7 = 0$$

$$2x + ky + 14 = 0$$

and represent coincident lines is

(a) 3 (b) 4

(c) –4 (d) –3

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$$x + 2y + 7 = 0$$

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and represent coincident lines is

(a) 3 (b) 4

(c) –4 (d) –3

Ans: (b)

Q) If $x^2 + y^2 + z^2 = xy + yx + zx$, then the value of

$$\frac{3x^4 + 7y^4 + 5z^4}{5x^2y^2 + 7y^2z^2 + 3z^2x^2}$$ is

(a) 1 (b) 2 (c) –1 (d) 0

Q) If $x^2+y^2+z^2=xy+yx+zx$, then the value of

$$\frac{3x^4+7y^4+5z^4}{5x^2y^2+7y^2z^2+3z^2x^2}$$ is

(a) 1 (b) 2 (c) –1 (d) 0

Ans: (a)

Q) If $2\sqrt{2}x^3 - 3\sqrt{3}y^3 = (\sqrt{2}x - \sqrt{3}y)(Ax^2 + By^2 + Cxy)$, then the value of $A^2 + B^2 - C^2$ is:

(a) 11 (b) 7 (c) 19 (d) 10

Q) If $2\sqrt{2}x^3 - 3\sqrt{3}y^3 = (\sqrt{2}x - \sqrt{3}y)(Ax^2 + By^2 + Cxy)$, then the value of $A^2 + B^2 - C^2$ is:

(a) 11 (b) 7 (c) 19 (d) 10

Ans: (b)

Q) If the roots of the equation $(a^2 + b^2)x^2 - 2(ac + bd)x + (c^2 + d^2) = 0$ are equal, then which of the following is true?

(a) $ab = cd$ (b) $ad = bc$

(c) $ad = \sqrt{bc}$ (d) $ab = \sqrt{cd}$

Q) If the roots of the equation $(a^2 + b^2)x^2 - 2(ac + bd)x + (c^2 + d^2) = 0$ are equal, then which of the following is true?

(a) $ab = cd$ (b) $ad = bc$

(c) $ad = \sqrt{bc}$ (d) $ab = \sqrt{cd}$

Ans: (b)

Q) Consider the following statements :

1 The equation $1990x - 173y = 11$ has no solution in integers for x and y.

2. The equation $3x - 12y = 7$ has no solution in integers for x and y.

Which of the above statements is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Q) Consider the following statements :

1 The equation $1990x - 173y = 11$ has no solution in integers for x and y.

2. The equation $3x - 12y = 7$ has no solution in integers for x and y.

Which of the above statements is/are correct?

(a) 1 only (b) 2 only

(c) Both 1 and 2 (d) Neither 1 nor 2

Ans: (c)

Q) If $\frac{x}{(2x+y+z)} = \frac{y}{(x+2y+z)} = \frac{z}{(x+y+2z)} = a$,

then find 'a' if $x+y+z \neq 0$

(a) $\frac{1}{3}$

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

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

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

Q) If $\frac{x}{(2x+y+z)} = \frac{y}{(x+2y+z)} = \frac{z}{(x+y+2z)} = a$,

then find 'a' if $x+y+z \neq 0$

(a) $\frac{1}{3}$ (b) $\frac{1}{4}$

(c) $\frac{1}{8}$ (d) $\frac{1}{2}$

Ans: (d)

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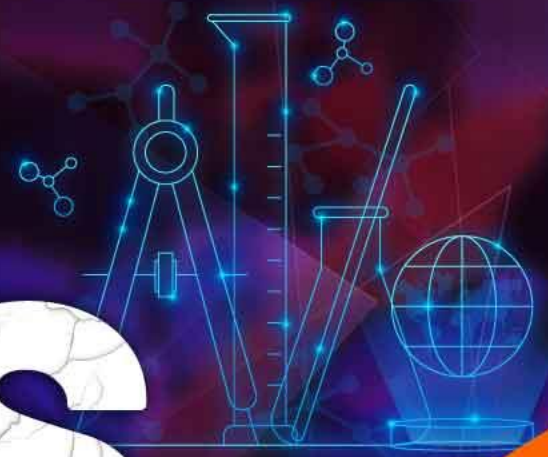

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