

(Mathematics)

Ques 1.) An equation of a plane parallel to the plane $x - 2y + 2z - 5 = 0$ and at a unit distance from the origin is:

(1) $x - 2y + 2z + 5 = 0$

(2) $x - 2y + 2z - 3 = 0$

(3) $x - 2y + 2z + 1 = 0$

(4) $x - 2y + 2z - 1 = 0$

Answer : (2)

Ques 2) - Out of 30 observations, 10 observations is $(\frac{1}{2} - d)$, 10 observations is d and remaining 10 observations is $(\frac{1}{2} + d)$.
 If variance of 30 observations is $\frac{4}{3}$.
 Then d is :-

(1) $\frac{1 + \sqrt{87}}{2\sqrt{3}}$

(2) $\frac{1 + \sqrt{95}}{2\sqrt{2}}$

(3) $\frac{1 + \sqrt{93}}{2\sqrt{3}}$

(4) $\frac{1 + \sqrt{93}}{2\sqrt{2}}$

Answer: (4)

Ques 3) $y(x)$ is the solutions of $\frac{dy}{dx} + \left(\frac{2x+1}{x}\right)$
 Given that $y(1) = \frac{1}{2}e^{-2}$. then $y(x)$ is:-

(1) decreasing in $x \in (0, 1)$

(2) decreasing in $(\frac{1}{2}, 1)$

(3) $y(\ln 2) = \frac{1}{4} \ln 2$

(4) $y\left(\frac{\ln 2}{2}\right) = \frac{1}{8} \ln 2$

Answer: (2)

Ques 4)-

$$f(x) = \begin{cases} -1 & -2 < x < 0 \\ x^2 - 1 & 0 \leq x \leq 2 \end{cases}$$

$$g(x) = \{f(x) + f(|x|)\}$$

then $g(x)$ is

(1) $\frac{1}{5}$

(2) $\frac{2}{5}$

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

(4) $\frac{4}{5}$

Answer : (2)

Ques 5)-

$A = \{1, 2, 3, \dots, 11\}$, two numbers are selected and sum are even. Then the conditional probability that both numbers are even is.

(1) $1/5$

(2) $2/5$

(3) $3/5$

(4) $4/5$

Answer : (2)

Ques 6) $\int_{-2}^2 \frac{\sin^2 x}{\frac{1}{2} + \left[\frac{x}{\pi}\right]} dx$ is equal to :-

- (1) 0
- (2) $\sin 4$
- (3) $4 \sin 4$
- (4) 2

Answer : (1)

Ques 7) If $xy = 4$ and $x^2 = 4y$. Then the common tangent is

- (1) $y = (-16)^{1/3}x - (-16)^{2/3}$
- (2) $y = (-16)^{2/3}x - (-16)^{1/3}$
- (3) $y = (16)^{1/3}x + (16)^{4/3}$
- (4) None.

Answer : (1)

Ques 8) If $\left(-2 - \frac{i}{3}\right)^3 = \frac{(x+iy)}{27}$

then $y-x$ is

- (1) $8\sqrt{5}$
- (2) 6
- (3) 91
- (4) 20

Answer : (3)

Ques 1) If the line $2x + y = k$ passes through the point which divides the line segment joining the points $(1, 1)$ and $(2, 4)$ in the ratio $3:2$, then k equals:

(1) $11/5$

(2) $29/5$

(3) 5

(4) 6

Answer : (4)

Ques 10.1 If one root of quadratic equation $81x^2 + \lambda x + 256 = 0$ is cube of other, then λ is :-

(1) -300

(2) -100

(3) $+200$

(4) -200

Answer : (1)