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Shift-2

EE24BTECH11063 - Y.Harsha Vardhan Reddy

SINGLE CORRECT

1) If for some $\alpha \in R$, the lines $L_1 : \frac{(x+1)}{2} = \frac{(y-2)}{-1} = \frac{(z-1)}{2}$ and $L_2 : \frac{(x+2)}{\alpha} = \frac{(y+1)}{5-\alpha} = \frac{(z+1)}{1}$ are coplanar, the the line L_2 passes through the point:
   a) $(2, -10. - 2)$
   b) $(10, -2, -2)$
   c) $(10, 2, 2)$
   d) $(-2, 10, 2)$

2) The value of $\left[\frac{(-1+i\sqrt{3})}{(1-i)} \right]^{30}$

   a) $2^{15}i$ b) -2^{15} c) $-2^{15}i$ d) 6^5

3) Let y=y(x) be the solution of the differential equation $\cos x \left(\frac{dy}{dx} \right) + 2y \sin x = \sin 2x$, $x \in \left(0, \frac{\pi}{2} \right)$. If $y\left(\frac{\pi}{3} \right) = 0$, then $y\left(\frac{\pi}{4} \right)$ is equal to:
   a) $2 + \sqrt{2}$
   b) $\sqrt{2} - 2$
   c) $\left(\frac{1}{\sqrt{2}} \right) - 1$
   d) $2 - \sqrt{2}$

4) If the system of linear equations

$$x + y + 3z = 0$$

$$x + 3y + k^2 z = 0$$

$$3x + y + 3z = 0$$

   has a non-zero solution (x, y, z) for some $k \in R$, then x+$\left(\frac{y}{z} \right)$ is equal to :
   a) -9
   b) 9
   c) -3
   d) 3

5) Which of the following points lies on the tangent to the curve $4x^3 e^y + x^4 e^y + 2\sqrt{y+1} = 3$ at the point $(1, 0)$?
   a) $(2, 6)$
   b) $(2, 2)$
   c) $(-2, 6)$
   d) $(-2, 4)$

INTEGER TYPE

1) Let A = {a,b,c} and B={1,2,3,4}. Then the number of elements in the set C={f : $A \rightarrow B$ $2 \in f(A)$ and f is not one-one} is :

2) The coefficient of x^4 in the expansion of $\left(1 + x + x^2 + x^3\right)^6$ in powers of x, is:

3) Let the vectors $\bar{a}, \bar{b}, \bar{c}$ such that $|\bar{a}| = 2, |\bar{b}| = 4$ and $|\bar{c}| = 4$. If the projection of vector b on vector a is equal to the projection of vector c on vector a and b is perpendicular to vector c, then the value $|\bar{a} + \bar{b} - \bar{c}|$ is:

4) If the lines $x + y = a$ and $x - y = b$ touch the curve $y = x^2 - 3x + 2$ at the points where the curve intersects the x-axis, then a/b is equal to:

5) In a bombing attack, there is 50% chance that a bomb will hit the target.At least two independent hits are required to destroy the target completely. Then the minimum number of bombs, that must be dropped to ensure that there is at least 99% chance of completely destroying the target, is