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Shift-2

EE24BTECH11063 - Y.Harsha Vardhan Reddy

Single correct

1) The angle of elevation of the summit of a mountain from a point on the ground is 45°. After climbing up one km towards the summit at an inclination of 30°from the ground, the angle of elevation of the summit is found to be 60°. Then the height (in km) of the summit from the ground is:

a) $\frac{1}{\sqrt{3}+1}$ b) $\frac{\sqrt{3}+1}{\sqrt{3}-1}$

c) $\frac{\sqrt{3}-1}{\sqrt{3}+1}$ d) $\frac{1}{\sqrt{3}-1}$

2) If the constant term in the binomial expansion of $\left(\sqrt{x}-\frac{k}{x^2}\right)^{10}$ is 405, then $|k|$ equals:

a) 1 b) 9 c) 2 d) 3

3) Let $z = x + iy$ be a non-zero complex number such that $z^2 = i|z|^2$,where $i = \sqrt{-1}$,then z lies on the
a) line, $y = x$
b) real axis
c) imaginary axis
d) line, $y = -x$

4) Let L denote the line in the xy-plane with x and y intercepts as 3 and 1 respectively. Then the image of the point $(-1,-4)$ in this line is:

a) $\left(\frac{11}{5},\frac{28}{5}\right)$ b) $\left(\frac{8}{5},\frac{29}{5}\right)$

c) $\left(\frac{29}{5},\frac{11}{5}\right)$ d) $\left(\frac{29}{5},\frac{8}{5}\right)$

5) Consider the statement: "For an integer n, if n^3-1 is even, then n is odd." The contrapositive statement of this statement is:
a) For an integer n, if n is even, then $n^3 - 1$ is even
b) For an integer n, if n is odd, then $n^3 - 1$ is even
c) For an integer n, if $n^3 - 1$ is not even, then n is not odd
d) For an integer n, if n is even, then $n^3 - 1$ is odd

Integer Type

1) The number of words(with or without meaning) that can be formed from all the letters of the word "LETTER" in which vowels never come together is:
2) If $\bar{x}$ and $\bar{y}$ be two non-zero vectors such that $|\bar{x}+\bar{y}| = |\bar{x}|$ and $2\bar{x}+\lambda\bar{y}$ is perpendicular to $\bar{y}$, then the value of λ is
3) Consider the data on x taking the values 0,2,4,8, ...,2n with frequencies ${}^nC_0, {}^nC_1, {}^nC_2, ..., {}^nC_n$,respectively. If the mean of this data is $\frac{728}{2^n}$, then n is equal to:

4) Suppose that function $f : R \to R$ satisfies $f(x+y) = f(x) f(y)$ for all $x, y \in R$ and $f(1) = 3$. If $\sum_{i=1}^{n} f(i) = 363$, then n is equal to:
5) The sum of distinct values of λ for which the system of equations

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

$$(\lambda - 1) x + (4\lambda - 2) y + (\lambda + 3) z = 0$$

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

has non-zero solutions, is :