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1) The value of $-^{15}C_1 + 2^{15}C_2 - 3^{15}C_3 + \cdots - 15^{15}C_1 +^{14}C_1 +^{14}C_3 +^{14}C_5 + \cdots^{14}C_{11}$ is

a) 2^{14}

b) $2^{13} - 13$

c) $2^{16} - 1$

d) $2^{13} - 14$

2) An ordinary dice is rolled for a certain number of times. If the probability of getting an odd number 2 times is equal to the probability of getting an even number 3 times, then the probability of getting an odd number for odd number of times is:

a) $\frac{3}{16}$

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

c) $\frac{5}{16}$

d) $\frac{1}{32}$

3) Let p and q be two positive number such that $p + q = 2$ and $p^4 + q^4 = 272$. Then p and q are roots of the equation:

a) $x^2 - 2x + 2$

b) $x^2 - 2x + 8$

c) $x^2 - 2x + 136$

d) $x^2 - 2x + 16$

4) If

$$e^{\left(\cos^2 x + \cos^4 x + \cos^6 x + \cdots\right)\log_e 2}$$

satisfies the equation $t^2 - 9t + 8 = 0$, then the value of $\frac{2\sin x}{\sin x + \sqrt{3}\cos x}$ $0 < x < \frac{\pi}{2}$ is :

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

b) $2\sqrt{3}$

c) $\frac{1}{2}$

d) $\sqrt{3}$

5) If the system of linear equations

$$3x - 2y - kz = 10$$

$$2x - 4y - 2z = 6$$

$$x + 2y - z = 5m$$

is inconsistent if:

a) $k = 3, m = \frac{4}{5}$

b) $k \neq 3, m \in R$

c) $k \neq 3, m \neq \frac{4}{5}$

d) $k = 3, m \neq \frac{4}{5}$