IIITB COMET FOUNDATION

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CBSE Class XII Mathematics
Multiple Choice Questions

1. Degree of the differential equation $\sin x + \cos\left(\frac{dy}{dx}\right) = y^2$ is

   (A) 2
   (B) 1
   (C) not defined
   (D) 0

2. The integrating factor of the differential equation $(1-y^2)\frac{dx}{dy} + yx = ay,\ (-1 < y < 1)$ is

   (A) $1/(y^2-1)$
   (B) $1/\sqrt{y^2-1}$
   (C) $1/(1-y^2)$
   (D) $1/\sqrt{1-y^2}$

3. Unit vector along PQ, where $P(2,1,-1)$ and $Q(4,4,-7)$ is

   (A) $2i+3j-6k$
   (B) $-2i-3j+6k$
   (C) $-2i/7-3j/7+6k/7$
   (D) $2i/7+3j/7-6k/7$

4. If in $\triangle ABC$, $BA = 2a$ and $BC = 3b$, then AC is

   (A) $2a+3b$
   (B) $2a-3b$
   (C) $3b-2a$
   (D) $-2a-3b$

5. If $|a \times b| = \sqrt{3}$ and $a \cdot b = -3$, then the angle between a and b is

   (A) $2\pi/3$
   (B) $\pi/6$
   (C) $\pi/3$
   (D) $5\pi/6$

6. Equation of the line passing through origin and making $30°, 60°, 90°$ with x, y, z axes respectively is

   (A) $2x/\sqrt{3} = y/1 = z/0$
   (B) $2x/\sqrt{3} = 2y/1 = z/0$
   (C) $2x = 2y/\sqrt{3} = z/1$
   (D) $2x/\sqrt{3} = 2y/1 = z/1$

7. If $P(A|B) = 2P(B|A)$ and $P(A) + P(B) = 2/3$, then $P(B)$ is

   (A) $2/9$
   (B) $7/9$
   (C) $4/9$
   (D) $5/9$

8. Anti-derivative of $(\tan x - 1)/(\tan x + 1)$ is

   (A) $\sec^2(\pi/4 - x) + c$
   (B) $-\sec^2(\pi/4 - x) + c$
   (C) $\log|\sec(\pi/4 - x)| + c$
   (D) $-\log|\sec(\pi/4 - x)| + c$

9. If $(a, b), (c, d), (e, f)$ are vertices of $\triangle ABC$ and Δ is its area, then

$$\begin{vmatrix} a & c & e \\ b & d & f \\ 1 & 1 & 1 \end{vmatrix}^2$$

   is equal to

   (A) $2\Delta^2$
   (B) $4\Delta^2$
   (C) 2Δ
   (D) 4Δ

10. The function $f(x) = x|x|$ is

    (A) continuous and differentiable at $x = 0$
    (B) continuous but not differentiable at $x = 0$
    (C) differentiable but not continuous at $x = 0$
    (D) neither differentiable nor continuous at $x = 0$