EXERCISE – V	JEE PROBLEMS

1. Find the equation of the straight line which is tangent at one point and normal at another point of the curve, $x = 3t^2$, $y = 2t^3$.   **[REE 2000 (Mains), 5]**

2. If the normal to the curve, $y = f(x)$ at the point (3, 4) makes an angle $3\pi/4$ with the positive x-axis. The $f'(3) =$
                    [JEE 2000 (Scr.), 1]
(A) –1   (B) –3/4   (C) 4/3   (D) 1

3. The point(s) on the curve $y^3 + 3x^2 = 12y$ where the tangent is vertical, is (are) **[JEE 2002 (Scr.), 3]**

(A) $\left(\pm\dfrac{4}{\sqrt{3}}, -2\right)$ (B) $\left(\pm\sqrt{\dfrac{11}{3}}, 1\right)$ (C) (0, 0) (D) $\left(\pm\dfrac{4}{\sqrt{3}}, 2\right)$

4. Tangent to the curve $y = x^2 + 6$ at a point P(1, 7) touches the circle $x^2 + y^2 + 16x + 12y + c = 0$ at a point Q. Then the coordinates of Q are
                    [JEE 2005 (Scr.), 3]
(A) (–6,–11)   (B) (–9,–13) (C) (–10,–15) (D) (–6,–7)

5. The tangent to the curve $y = e^x$ drawn at the point (c, e^c) intersects the line joining the points $(c - 1, e^{c-1})$ and $(c + 1, e^{c+1})$ **[JEE 2007, 3]**
(A) on the left of x = c   (B) on the right of x = c
(C) at no point   (D) at all points

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