Class 12 Maths Chapter 6 Application of Derivatives MCQs For Practice

1. A ladder 5m long, standing on a horizontal floor, leans against a vertical wall. If the top of the ladder slides downwards at the rate of 10m/sec, then the rate at which the angle between the floor and the ladder is decreasing when the lower end of the ladder is 2 metres from the wall is:
(a) 1/10 radian/sec
(b) 1/20 radian/sec
(c) 20 radian/sec
(d) 10 radian/sec

2. For the curve y = 5x - 2x³, if x increases at the rate of 2units/sec, then at x = 3 the slope of the curve is changing at
(a) -72 units/sec
(b) -36 units/sec
(c) 24 units/sec
(d) 48 units/sec

3. The equation of normal to the curve 3x²- y² = 8 which is parallel to the line x + 3y = 0 is
(a) 3x - y = 8
(b) 3x + y + 8 = 0
(c) x + 3y ± 8 = 0
(d) x + 3y = 0

4. Sand is pouring from a pipe at the rate of 12 cm³/s. The falling sand forms a cone on the ground in such a way that the height of the cone is always one-sixth of the radius of the base. How fast is the height of the sand cone increasing when the height is 4 cm?
(a) $1/40\pi$ cm/sec
(b) 48π cm/sec
(c) $1/48\pi$ cm/sec
(d) None of the above

5. The interval in which the function f is given by f(x) = x²e⁻ˣ is strictly increasing, is
(a) (-∞, ∞)
(b) (-∞, 0)
(c) (2, ∞)
(d) (0, 2)

6. The maximum value of [x(x - 1) + 1]¹ᐟ³ , 0 ≤ x ≤ 1 is
(a) (1, 2)
(b) (2, 1)
(c) (1, -2)
(d) (-1, 2)

7. $f(x) = x^x$ has a stationary point at
(a) $x = e$
(b) $x = 1/e$
(c) $x = 1$
(d) $x = \sqrt{e}$

8. The total revenue in Rupees received from the sale of x units of a product is given by $R(x) = 3x^2 + 36x + 5$. The marginal revenue, when x = 15 is
(a) 116
(b) 96
(c) 90
(d) 126

9. The least value of the function $f(x) = ax + b/x$, (a > 0, b > 0, x > 0) is
(a) 2ab
(b) ½ $\sqrt{ab}$
(c) $2\sqrt{ab}$
(d) $\sqrt{ab}$

10. If $y = \log_e x$, then the value of $\triangle y$ when x = 3 and $\triangle x = 0.03$ is
(a) 0.2
(b) 0.01
(c) 0.1
(d) 0.001

* * * * * * * * * * ANSWER KEYS* * * * * * * * * *
Q.1 - (b)   Q.2 - (a)   Q.3 - (c)   Q.4. - (c)   Q.5 - (d)
Q.6 - (a)   Q.7 - (b)   Q.8 - (d)   Q.9 - (c)   Q.10 - (b)