Class 12 Maths Chapter 9 Differential Equations MCQs For Practice

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

(a) 1
(b) 2
(c) 3
(d) not defined

2. The degree of the differential equation $x^2\frac{d^2y}{dx^2} = \left(x\frac{dy}{dx} - y\right)^3$ is:

(a) 1
(b) 2
(c) 3
(d) 6

3. The order of the differential equation represent all circles of radius a is:
(a) 1
(b) 2
(c) 3
(d) 4

4. The order and degree of a differential equation $\frac{d^2y}{dx^2} + \left(\frac{dy}{dx}\right)^{\frac{1}{4}} + x^{\frac{1}{5}} = 0$, respectively, are

(a) 2 and not defined
(b) 2 and 2
(c) 2 and 3
(d) 3 and 3

5. Integrating factor of $x\frac{dy}{dx} - y = x^4 - 3x$ is

(a) x
(b) $\log_e x$
(c) 1/x
(d) -x

6. Solution of $\frac{dy}{dx} - y = 1$, y(0) = 1 is given by

(a) xy = -e^x
(b) xy = -e^{-x}
(c) xy = -1
(d) y = 2e^x - 1

7. If y = e^x(Acos x + Bsin x), then y is a solution of

(a) $\frac{d^2y}{dx^2} + 2\frac{dy}{dx} = 0$

(b) $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + 2y = 0$

(c) $\frac{d^2y}{dx^2} + 2\frac{dy}{dx} + 2y = 0$

(d) $\frac{d^2y}{dx^2} + 2y = 0$

8. Which of the following is a second-order differential equation?
(a) $(y')^2 + x = y^2$
(b) $y'y'' + y = \sin x$
(c) $y''' + (y'')^2 + y = 0$
(d) $y' = y^2$

9. The solution of differential equation xdy - ydx = 0 represents
(a) a rectangular hyperbola
(b) parabola whose vertex is at origin
(c) straight line passing through origin
(d) a circle whose centre is at origin

10. The integrating factor of the differential equation $x\frac{dy}{dx} - y = 2x^2$ is:

(a) e^{-x}
(b) e^{-y}
(c) 1/x
(d) x

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Q.1 - (c)   Q.2 - (a)   Q.3 - (c)   Q.4. - (a)   Q.5 - (c)

Q.6 - (d)   Q.7 - (c)   Q.8 - (b)   Q.9 - (c)   Q.10 - (c)