

Practice Questions

1) Order & degree of $1 + \frac{dy}{dx} + \left(\frac{d^2y}{dx^2}\right)^{3/2} = 0$ is

2) Order & degree of $x = \frac{1}{\left(1 + \frac{dy}{dx} + \frac{d^2y}{dx^2}\right)^{3/2}}$ is

3) The order of D.E whose general solⁿ is given by $y = C_1 + C_2 e^x + C_3 e^{-x} + C_4 e^{-2x}$ is

4) The order of D.E whose G.S is given by $y = (D_1 + D_2 + D_3 + D_4) e^x$ is

5) D.E whose general solⁿ is given by $y^2 = 4ax$ is ?

6) D.E whose general solⁿ is given by $y^2 = C(4 + e^x)$ is ?

7) Solution of $\frac{dy}{dx} + y = 0$ is ?

8) Solution of $\frac{dy}{dx} = \frac{1+y}{1+x}$ is ?

9) Solution of $\sec^2 x \tan y dx + \sec^2 y \tan x dy = 0$ is ... ?

- 10) Solution of $\frac{dy}{dx} = e^{x+y} + e^{y-x}$ is ... ?
- 11) I.F of $(x^2y^2 + xy + 1)ydx + (x^2y^2 - xy + 1)x dy = 0$
- 12) I.F of $(2x \log x - xy)dy + 2ydx = 0$ is ...
- 13) Solution of non-exact D.E
 $(3xy^2 - y^3)dx + (xy^2 - 2x^2y)dy = 0$ with
 integrating factor I.F = $\frac{1}{x^2y^2}$ is ...
- 14) I.F of $\frac{dy}{dx} + \frac{y}{1+x^2} = x^2$ is ... ?
- 15) The Bernoulli's D.E $\frac{dy}{dx} - y \tan x = y^4 \sec x$
 reduces to L.D.E ?
 (Write Reduced D.E only).
- 16) O.T of family of curves $e^x + e^{-y} = c$ is ...
- 17) O.T of family of curves $r = a \cos^2 \theta$ is ...
- 18) The D.E for the current 'i' in an electric circuit containing resistance 100Ω and an inductance of 0.5 H connected in series with 20 V battery is ... ?

19) In RL circuit, $i = \frac{E}{R} (1 - e^{-\frac{R}{L}t})$

then $i_{\max} = ?$

20) A pipe 10 cm in diameter contains steam at 100°C . It is protected with asbestos 5 cm thick for $k = 0.0006$ and outer surface is at 30°C . The differential equation of conduction of heat is $dT = -\frac{Q}{2\pi k} \cdot \frac{dx}{x}$.

The amount of heat loss Q is.

i) $\frac{\log 2}{70(2\pi k)}$ ii) $\frac{70(2\pi k)}{\log 2}$

iii) $\frac{70(2\pi k)}{\log 2}$ iv) $\frac{2\pi k}{\log 2}$

1) The equation of tangents at origin to the curve $y(1+x^2)=x$ is _____

2) Asymptote parallel to y -axis to the curve $x^2y^2=a^2(y^2-x^2)$ is _____

3) Region of absence to curve $y^2(2a-x)=x^3$ is _____

4) For curve $r=a(1+\cos\theta)$, check symmetry & passing through pole.

5) The tangents at pole to $r=a\sin 3\theta$ are $\theta = ?$

6) For curve $x(x^2+y^2)=a(x^2-y^2)$, check symmetry and passing through origin.