CLASS XII
SAMPLE PAPER
MATHS

Solve the differential equations:

1. $\frac{dy}{dx} = 1 + x + y + xy$ given that y=0 when x=1
2. $x\frac{dy}{dx} - y + xcosec\left(\frac{y}{x}\right) = 0$ given that y=0 when x=1
3. $xlogx\frac{dy}{dx} + y = \frac{2}{x}logx$
4. $(x - y)\frac{dy}{dx} = x + 2y$
5. $\left\{xsin^2\left(\frac{y}{x}\right) - y\right\}dx + xdy = 0$ given that y = $\frac{\pi}{4}$ when x=1
6. $\frac{dy}{dx} = \frac{x(2logx+1)}{siny+ycosy}$, given that y = $\frac{\pi}{2}$, x=1
7. $e^x\sqrt{1-y^2}dx + \frac{y}{x}dy = 0$, given that y=1 when x=0
8. $(x^2 - 1)\frac{dy}{dx} + 2xy = \frac{2}{x^2-1}$
9. $cosecxlogy\frac{dy}{dx} + x^2y^2 = 0$
10. $x(y^2 + 1)dx - y(x^2 + 1)dy = 0$, given that y=1 when x=0
11. $\log\left(\frac{dy}{dx}\right) = 3x + 3y$, given that y=0 when x=0
12. $(x^2 + 1)\frac{dy}{dx} + y = e^{tan^{-1}x}$
13. $\frac{dy}{dx} + 2ytanx = sinx$, given that y = 0 when x = $\frac{\pi}{3}$
14. $xcos\left(\frac{y}{x}\right)\frac{dy}{dx} = ycos\left(\frac{y}{x}\right) + x$
15. $\left(\frac{2+sinx}{1+y}\right)\frac{dy}{dx} = cosx$, given y(0) = 1 then find y($\frac{\pi}{2}$)
16. $x\frac{dy}{dx} + y = xcosx + sinx$, given that y($\frac{\pi}{2}$) = 1
17. $\frac{dy}{dx} + ycotx$ =2cosx, given that y=0 when x = $\frac{\pi}{2}$
18. $(x^2 - x^2y)dy + (y^2 + x^2y^2)dx = 0$, given that y(1)=1
19. $\frac{dy}{dx} + ysecx = tanx$
20. $2x^2\frac{dy}{dx} - 2xy + y^2 = 0$