Assignment-1

1. Solve $\sqrt{(1+x^2+y^2+x^2y^2)}\,dx + xy\,dy = 0.$
2. Solve $\frac{dy}{dx} = \sin(x+2y) + \cos(x+2y)$
3. Solve $(x^3+y^3)\,dx - (x^2y+xy^2)dy = 0.$
4. Solve $3y-7x+7)\,dx + (7y-3x+3)dy = 0.$
5. Solve $\left(y\left(1+\frac{1}{x}\right)+\cos y\right)dx + (x+\ln x - x\sin y)dy = 0.$
6. Solve $x^2\frac{dy}{dx} + xy = \sqrt{1-x^2y^2}.$
7. Solve $(x^3-2y^2)dx + 2xy\,dy = 0.$
8. Solve $(y^4+2y)dx + (xy^3+2y^4-4x)dy = 0.$
9. Find an integrating factor in the form $x^m y^n$ and then solve $(2x^2y^2+y)dx - (x^3y-3x)dy = 0.$
10. Find an integrating factor as a function of (x^2+y^2) and then solve $(x+x^4+y^4+2x^2y^2)dx + ydy = 0.$