

MA3180 (Financial Mathematics I) Assignment 7

Solve the following equations

1. $(2xy + x)dx + (x^2 + y)dy = 0$.
2. $ye^{xy}dx + xe^{xy}dy = 0$.
3. $(y \sin x + xy \cos x)dx + (x \sin x + 1)dy = 0$.
4. $y' - 7y = e^x$.
5. $y' + x^2y = x^2$.
6. $y' + \frac{2y}{x} = x; y(1) = 0$.
7. $y' = y + \sin x$.
8. $x - e^x + 4y^3y' = 0$.
9. $y' = \frac{\cos y}{x \sin y - 1}$.
10. $(x^2 - 2xy - y^2)y' = x^2 + 2xy - y^2$.

Solve the following second-order linear equations

11. $y'' - y = 0$.
12. $y'' - y' - 30y = 0$.
13. $y'' + 2y' + 2y = 0$.
14. $y'' + 3y' - 4y = 0, y(0) = 2, y'(0) = -3$.
5. $y'' + 9y = 0, y(\pi/3) = 0, y'(\pi/3) = 1$.