Ordinary Differential Equations - 10413181

Homework No. 3

For the following differential problems, proceed in steps: a) determine the order and whether the equation is linear/nonlinear. b) select a method from the ones you have learned. c) solve the equation/IVP. d) check your answer.

1. $2t\sin(y) + y^3e^t + (t^2\cos(y) + 3y^2e^t)y' = 0$
2. $y' + y = 5\sin(2t)$
3. $y' = (\cos^2(x))(\cos^2(2y))$
4. $2y' + y = 3t^2$
5. $2x + 3 + (2y - 2)y' = 0$
6. $y' - 4y = e^{4t}, \quad y(0) = 2$