

Homework #3

Math 527, UNH fall 2011

Instructions: This homework will not be collected. But you should do these problems as preparation for the exam. Find the general solution or the solution of the initial value problem.

1. $y - \frac{dy}{dx} + 2xe^{2x} = 0, \quad y(0) = 1$

2. $t \frac{dy}{dt} + y = \cos \omega t$

3. $\frac{dy}{dx} = -\frac{3x^2y + 4xy^2}{x^3 + 4x^2y + 1}$

4. $y \sin x + \cos x \frac{dy}{dx} - 1 = 0$

5. $t \frac{dy}{dt} + (3t + 1)y = e^{-3t}$

6. $\left(\frac{3y^2 - t^2}{y^5} \right) \frac{dy}{dt} + \frac{t}{2y^4} = 0, \quad y(1) = 1$

7. $\left(\frac{1}{y^2 + 1} + \cos x - 2xy \right) \frac{dy}{dx} = y(y + \sin x), \quad y(0) = 1$

8. $(x + 1) \frac{dy}{dx} + (x + 2)y = 2xe^{-x}$

9. $\frac{dy}{dx} = \frac{y - x}{y + x}$

10. $\frac{dy}{dx} = y(xy^3 - 1)$