

MAT 239 (Differential Equations), Prof. Swift
Worksheet 3

1. Write down the general solution to $y' = x + 1$. _____
2. Solve the Initial Value Problem (IVP) $y' = x + 1$, $y(0) = -2$.
3. Write down the general solution to $\frac{dy}{dx} = -y$. _____
4. Solve the IVP $\frac{dy}{dx} = -y$, $y(0) = 2$.
5. Write down the general solution to $\frac{dy}{dt} = 2y$. _____
6. Solve the IVP $\frac{dy}{dt} = 2y$, $y(0) = -1$.

For each of these IVPs, write down the solution by inspection.

7. $\frac{dy}{dx} = 3y, \quad y(0) = 1.$

8. $\frac{dy}{dt} = -4y, \quad y(0) = 2.$

9. $\frac{dy}{dx} = 6y, \quad y(0) = 0.$

10. $\frac{dy}{dt} = y, \quad y(0) = 1.$

11. $\frac{dy}{dx} = -\frac{1}{2}y, \quad y(0) = 2.$