Practice worksheet | Rates of change and differential equations

Differential equations and initial conditions

Name: _____ Date: _____

6 questions | 12 marks

1. Find the general solution of $y' = 4x^3$. [2 marks]

2. Solve $y' = \cos x$ with $y(0) = 2$. [2 marks]

3. Verify that $y = 3e^{-2x}$ solves $y' = -2y$. [2 marks]

4. Does $y = x^2$ solve $y' = 2y$ for all real x? [2 marks]

5. Solve $y' = \frac{2}{x+1}$ with $y(0) = 3$ on $x > -1$. [2 marks]

6. An amount follows $P' = 0.04P$, $P(0) = 800$. Verify $P = 800e^{0.04t}$. [2 marks]