

Calculus Class Worksheet #1 Unit 4 _____

Find the general solution and the specific solution to each of the following differential equations. Show your work neatly organized.

1. $f'(x) = x^2 - 2x + 3$; $f(0) = 4$

2. $f'(x) = 3x^2 + 4x - 1$; $f(2) = 0$

3. $f'(x) = (x + 2)^2$; $f(-3) = 1$

4. $f''(x) = 3x - 4$; $f(0) = -2$; $f(2) = -2$

5. $f''(x) = -6x + 6$; $f(1) = 3$; $f(3) = -3$

Write a differential equation and use it to answer the following questions. Show your work neatly organized.

6. The slope, m , of a particular curve at any point (x, y) on the curve is given by the equation $m = 4x - 3$. Find the equation of the curve if it passes through the point $(1, 3)$.

7. A function is such that its second derivative is $f''(x) = -6x$. Find its equation if it is tangent to $y = x + 3$ at the point $(3, 4)$.