Calculus Worksheet #2 Unit 4 page 1 _____

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

1. $f'(x) = x^2 - 5x + 1$; $f(0) = 5$

2. $f'(x) = 2x^2 + x - 4$; $f(6) = 141$

3. $f'(x) = 6x + 1$; $f(-2) = 11$

4. $f'(x) = x^2 + 2x - 3$; $f(3) = 6$

5. $f'(x) = (3x + 1)^2$; $f(-2) = -15$

6. $f'(x) = 3x^2 - 3x^{-2}$; $f(3) = 30$

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

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

8. $f''(x) = 12x - 2$; $f(0) = 0$; $f(3) = 0$

9. $f''(x) = -6$; $f(1) = 4$; $f(-2) = -1$

10. $f''(x) = 12x$; $f(2) = 2$; $f(-1) = 5$

11. $f''(x) = 3x$; $f(0) = 8$; $f(4) = 0$

Find the equation of the curve described in each of the following problems. Show your work neatly organized.

12. The slope, m, of the curve at any point (x, y) on the curve is given by the equation $m = 3x + 1$. The curve passes through the point (-2, 1).

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Find the equation of the curve described in each of the following problems. Show your work neatly organized.

13. The slope, m, of the curve at any point (x, y) on the curve is given by the equation $m = 6x^2 - 5$. The curve has an x-intercept of -1.

14. The slope, m, of the curve at any point (x, y) on the curve is given by the equation $m = -2x + 4$. The curve is tangent to the x-axis.

15. The second derivative of the curve is given by the equation $f''(x) = 3x - 5$. The curve is tangent to the line $y = 2x - 1$ at the point (4, 7).