

Name _____

Calculus Review

Beginning Techniques of Differentiation

Part I - Using the Definition of Derivative, find the derivative of:

1) $f(x) = 3x^2 + 7x$

2) $f(x) = x^3 - 5$

Part II – Find the slope of the tangent line at any point for each curve (derivative) using any method: Circle your answer.

3) $f(x) = 5x^2 + 12x - 1$

4) $y = \tan^5(3x^2)$

5) $y = 8x^3 + 5x + 4$

6) $f(x) = (2x + 3)\left(\frac{3x^3}{\sin x}\right)$

7) $f(x) = (4x^2 + 5)^2$

Part III:

8) Give the slope of the tangent line to the graph $f(x) = 2x^4 + 5x$ @ $x = 4$

9) Give the slope of the tangent line to the graph $y = x^5 + 7x^3$ @ $x = -1$

10) Write the **equation** of the line tangent to $y = 3x^3 + 2x$ @ $x = -2$.

11) Write the **equation** of the line tangent to $f(x) = x^4 + 5x$ @ $x = 3$.