Calculus Week 4 homework Name_____ Period___

ATTACH SHEETS TO SHOW ALL WORKING ON THESE PROBLEMS!

1) Use the Limit Definition of a derivative to find $f'(x)$ if $f(x) = x^2 + x$

$$f'(x) = \lim_{h \to 0} \frac{f(x+h) - f(x)}{h}$$

2) Use the Limit Definition of a derivative to find $f'(x)$ if $f(x) = 2x^2 + 7$

3) Use the Limit Definition of a derivative to find $f'(x)$ if $f(x) = x^2 + 2x + 4$

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4) Use the Alternative Definition of a derivative to find $f'(2)$ if if $f(x) = x^2 + 3x - 7$

$$f'(c) = \lim_{x \to c} \frac{f(x) - f(c)}{x - c}$$

5) Use the Alternative Definition of a derivative to find $f'(2)$ if if $f(x) = 2x^2 + 4x$

6) Use the Alternative Definition of a derivative to find $f'(2)$ if if $f(x) = 7 - 5x^2$

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7) Use the Limit Definition of a derivative to find $f'(2)$ if if $f(x) = 2x^2 + 2x + 4$

8) Use the Limit Definition of a Derivative to find $f'(x)$ if $f(x) = \sqrt{2x - 1}$

9) Use the Limit Definition of a derivative to find $f'(x)$ if $f(x) = \frac{2}{5-x}$

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10) Use the Alternative Definition of a derivative to find *f'(2)* if $f(x) = \sqrt{3-x}$

$$f'(c) = \lim_{x \to c} \frac{f(x) - f(c)}{x - c}$$

11) Use the Alternative Definition of a derivative to find *f'(2)* if $f(x) = \frac{3}{x+2}$

12) Find the equation of the tangent line to $f(x) = 2 - 3x^2$ at $x = -1$

13) Find the equation of the tangent line to $f(x) = \frac{x+1}{x+4}$ at $x = 2$