AP Calculus AB

Name: _____

Chain Rule &
Derivatives Quiz Review
HW 2-7

Use the chain rule to find the derivative.

1) $y = (3x+2)^4$

2) $y = \sqrt{4x^2-7}$

3) $y = \left(\frac{5x-1}{2x+5}\right)^2$

4) $y = (x-4)^2(2x+1)^3$

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

6) $y = \frac{1}{(x-4)^2}$

7) $f(x) = 8\sqrt{4x+7}$

8) $y = 5(x+3)^2(x-1)^2$

9) $y = \frac{(t+3)^2}{(t-1)}$

10) $f(x) = (x-4)^8(3-x)^4$

11) $y = \sqrt{x}\,(x+1)^2$

Review for your quiz!

1) Use the limit definition of derivative to find $f'(x)$ if $f(x) = 2x^2+4$.

2) Find the equation of the tangent line to $f(x) = x^2-2x-3$ at $(-2,5)$.

Differentiate.

3) $f(x) = 4x^2-5x^3+2x-3$

4) $y = \frac{3x}{x^2+1}$

5) $y = (z^5)(7z^2+z)$

6) Find the equation of the tangent line at $x = \frac{\pi}{3}$ if $f(x) = 4\sin x \cos x$.

7) Let $f(x) = 2x^3-3x^2-12x+4$. Find all points on the graph at which the tangent line is horizontal. Then, find all the points at which the slope is 12.

8) An arrow is shot upward with a position function of $s(t) = 70t-2t^2$.

a) Find the average velocity between 30 and 45 seconds.

b) Find the instantaneous velocity at $t=3$ seconds.

c) With what velocity did the arrow land?