Tangent Slope Practice

Name_____

Instantaneous Velocity Equation

$$\lim_{x \to a} \frac{f(t) - f(a)}{t - a}$$

1) Eddie is driving his go cart along a track such that his position can be given by the equation $f(t) = t^2$. Use the limit equation above and refer to the diving board screencast slides to find the Eddie's velocity at time t = a

2) Audrey is passing Eddie in his go cart because her position can be given by the equation $f(t) = t^3$. Use the limit equation above to find the Audrey's velocity at time t = a

Hint: $t^3 - a^3 = (t - a)(t^2 + at + a^2)$

3) Laura is passing both of them because her position can be given by the equation $f(t) = t^4$. Use the limit equation above to find the Laura's velocity at time t = aHint: $t^4 - a^4 = (t^2 - a^2)(t^2 + a^2)$ 4) If Rocky is passing everyone because her position can be given by the equation $f(t) = t^5$, use the pattern of answers to #1-3 to predict Rocky's velocity at time t = a without using the slope equation.

5) What if Rocky's position equation were $f(t) = t^6$?

$$6) \quad \lim_{x \to 4} \frac{\sqrt{x-2}}{x-4}$$

7)
$$\lim_{x \to 2} \frac{\frac{3}{x+4} - \frac{1}{x}}{x-2}$$