Name:_____

12.3 (part 2)

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

$$v(t) = \lim_{h \to 0} \frac{f(t+h) - f(t)}{h}$$

1) **[Review]** Find the slope of the tangent line to the graph of $f(x) = 5x^3$ at (2, 40).

Submit your response via Socrative: 08EC238B (it's a zero)

[12.3 part 1]

Ex. A: Find an equation for the slope of the graph of $y = x^2 + 3x$ at any point.

2) Find an equation for the slope of the graph of $y = x^2 + 3x - 2$ at any point.

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Ex. B: Tourist standing on a 300 foot tall viewing tower often drop coins into the fountain below. The height of a coin falling from the tower after t seconds is given by:

$$h(t) = 300 - 16t^2$$

i) Find the equation for the instantaneous velocity $v(t)$ of the coin at any point in time.

ii) Find the instantaneous velocity $v(t)$ of the coin at 2 seconds.

3) A billiard ball is dropped from a height of 100 feet. The ball's height s at time t is the position function:

$$s = -16t^2 + 100$$

where s is measured in feet and t is measured in seconds. What's the ball's instantaneous velocity at t =1 and t=2?

Submit your response via Socrative.