Quiz 1A, Business Calculus

Fall 2014 - Dr. Graham-Squire

11:11
11:15
4 => 15 -> 20 minutes

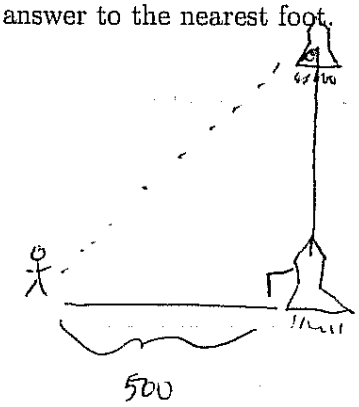
Name: Key

1. (5 points) Dominic has attached his sister Eva's favorite stuffed animal bear to a rocket and is watching the rocket launch. Suppose that Dominic is standing 500 feet from the bottom of the rocket (on a flat field) as it takes off, and the rocket rises straight up at a rate of 200 feet per second. Answer these questions:

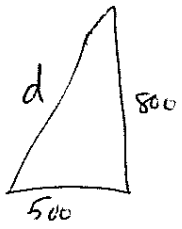
   (a) Draw a diagram of the situation.

   (b) What is the (diagonal) distance between Dominic and the rocket after 4 seconds? Round your answer to the nearest foot.

(a)



(b) 4 seconds $\Rightarrow$ $200 \cdot 4 = 800$ feet above ground



So distance is d.

$$d^2 = 500^2 + 800^2$$

$$d = \sqrt{250000 + 640000} = 943.398$$

943 feet

2. (2 points) Simplify the expression by removing parentheses and combining like terms.

$$4 - \left(6x - 3(x^2 + 2x + 4) + \sqrt{3^2 + 4^2}\right)$$

$4 - (6x - 3x^2 - 6x - 12 + \sqrt{9+16})$

$= 4 + 3x^2 + 12 - 5$

$= \boxed{3x^2 + 11}$

3. (3 points) Simplify the expression by factoring and canceling, if possible. You can leave your answer in factored form. If you need to use it, the quadratic formula is $\left(\dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}\right)$.

$$\frac{x^2 + x - 6}{x^2 - 16} \div \frac{x - 3}{2x - 8}$$

$= \dfrac{(x+3)(x-2)}{(x-4)(x+4)} \cdot \dfrac{2(x-4)}{(x-3)}$

$= \boxed{\dfrac{2(x+3)(x-2)}{(x+4)(x-3)}}$