

Quiz 1A, Business Calculus

Fall 2012

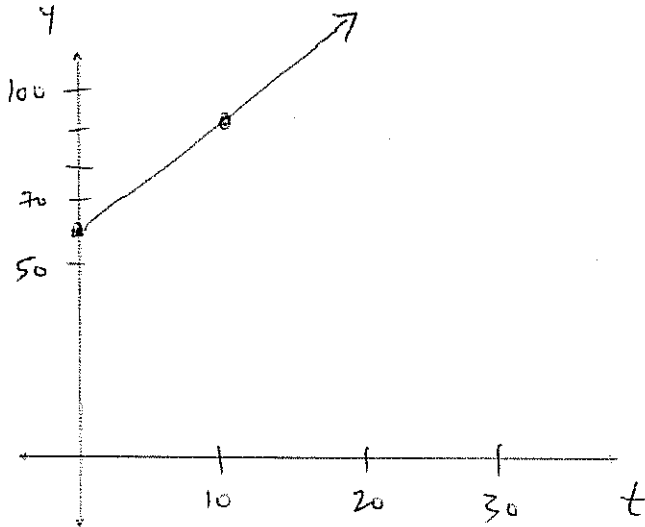
Name: Key

1. (5 points) Milk production in the U.S. (as a percent of worldwide output) is approximated by the equation

$$y = 60 + 3t$$

where t is measured in years, with $t = 0$ corresponding to 2010.

- (a) Sketch the line of the equation given above:



- (b) What will the percentage output be in 2015?

$$t = 5 \Rightarrow 60 + 3 \cdot 5 = 75\%$$

- (c) What will the percentage output be in 2030? Does this make sense? Why or why not?

$t = 20 \quad 60 + 3 \cdot 20 = 120\%$ Make no sense because can't have more than 100% of worldwide output.

2. (5 points) Simplify the expression by removing parentheses, combining like terms, factoring and canceling. If you need to use it, the quadratic formula is $\left(\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}\right)$.

$$\frac{2x^2 - 3x - (x^2 - 7x + 21)}{2x^2 - 7x + 3}$$

$$= \frac{2x^2 - 3x - x^2 + 7x - 21}{(2x-1)(x-3)} \checkmark \checkmark$$

$$= \frac{x^2 + 4x - 21}{(2x-1)(x-3)} \checkmark \sqrt{1/2}$$

$$= \frac{(x+7)(\cancel{x-3})}{(2x-1)(\cancel{x-3})} \checkmark \sqrt{1/2}$$

$$= \boxed{\frac{x+7}{2x-1}}$$

Quiz 1B, Business Calculus

Fall 2012

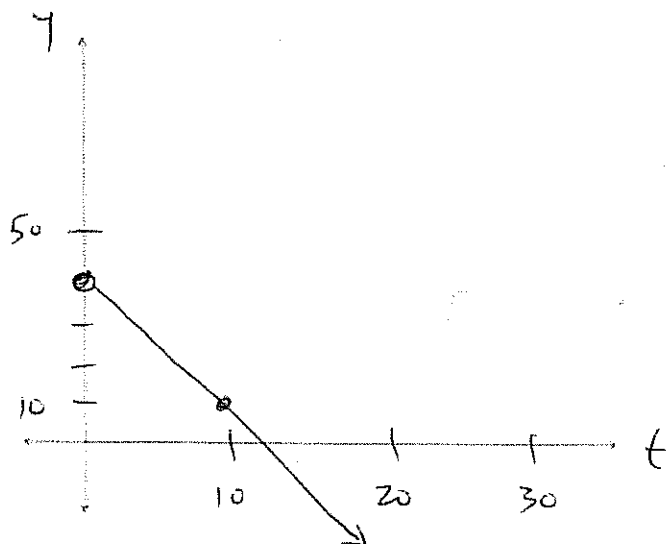
Name: Key

1. (5 points) Milk production in the U.S. (in millions of gallons) is approximated by the equation

$$y = 40 - 3t$$

where t is measured in years, with $t = 0$ corresponding to 2010.

- (a) Sketch the line of the equation given above:



- (b) What will the output be in 2015?

$$t = 5 \Rightarrow y = 40 - 5 \cdot 3 = \boxed{25 \text{ million gallons}}$$

- (c) What will the output be in 2030? Does this make sense? Why or why not?

$$t = 20 \Rightarrow y = 40 - 3 \cdot 20 = \boxed{-20 \text{ million gallons}}$$

Does

2. (5 points) Simplify the expression by removing parentheses, combining like terms, factoring and canceling. If you need to use it, the quadratic formula is $\left(\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}\right)$.

$$\frac{3x^2 + 4x - (x^2 + 11x - 6)}{x^2 + 3x - 15}$$

$$= \frac{3x^2 + 4x - x^2 - 11x + 6}{\cancel{(x+5)} x^2 + 3x - 15}$$

$$= \frac{2x^2 - 7x + 6}{x^2 + 3x - 15}$$

does not factor ✓

$$= \frac{(2x-3)(x-2)}{x^2 + 3x - 15}$$

✓✓✓ for $x^2 + 3x - 10$ in denom:

$$\frac{(2x-3)(x-2)}{x^2 + 3x - 10} = \frac{(2x-3)(x-2)}{\cancel{(x+5)}(x-2)}$$

$$= \frac{2x-3}{x+5}$$