

# Quiz 2A, Business Calculus

Fall 2012

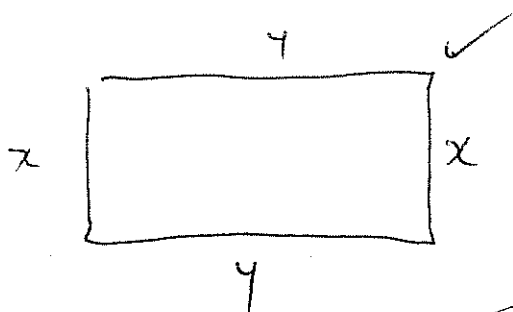
9:42

9:45

3

Name: Key

1. (4 points) Ellie wants to have a rectangular garden in her backyard with an area of  $300 \text{ ft}^2$ , and she wants to put a fence around it. Let  $x$  be the width of the garden. Write an equation (in terms of  $x$ ) for the amount of fencing she will need to go around the perimeter of the garden.



$$\text{Area} = xy$$

$$300 = xy \quad \checkmark$$

$$\frac{300}{x} = y$$

$$\text{Perimeter} = 2x + 2y \quad \checkmark$$

$$P(x) = 2x + 2\left(\frac{300}{x}\right) \quad \checkmark$$

$$P(x) = 2x + \frac{600}{x}$$

2. (4 points) Find the limits.

$$(a) \lim_{x \rightarrow 3} \frac{x^2 + x - 12}{x^2 - 5x + 6} = \lim_{x \rightarrow 3} \frac{(x+4)(x-3)}{(x-2)(x-3)}$$

$$= \lim_{x \rightarrow 3} \frac{x+4}{x-2} = \frac{7}{3-2} = \frac{7}{1} = \boxed{7}$$

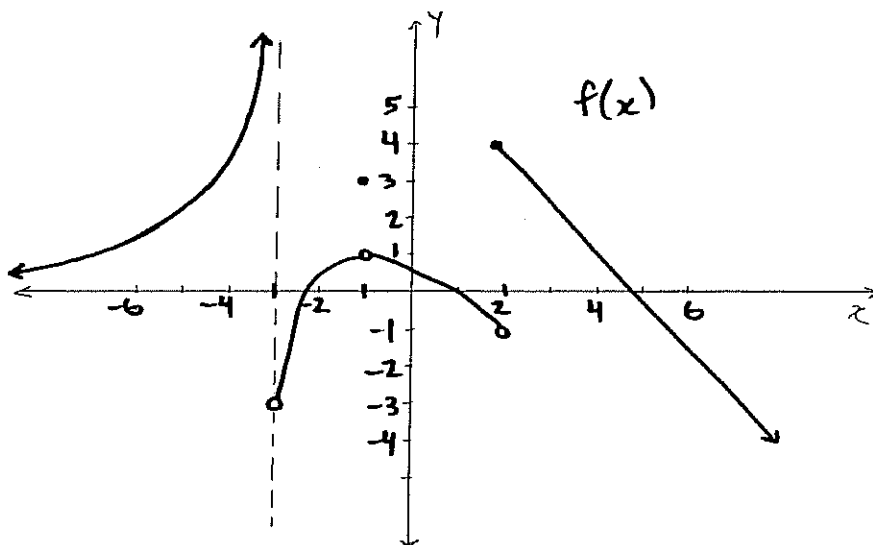
2.5

-0.5 if no  $\lim_{x \rightarrow 3}$  notation

$$(b) \lim_{x \rightarrow 0} \frac{x+7}{x^2} = \frac{0+7}{0^2} = \frac{7}{0} \quad \boxed{DNE}$$

1.5

3. (2 points) Find the limits for the given graph. If the limit does not exist, write DNE.



$$(a) \lim_{x \rightarrow (-3)^+} f(x) = -3$$

$$(b) \lim_{x \rightarrow (-3)^-} f(x) = \infty$$

or  
DNE

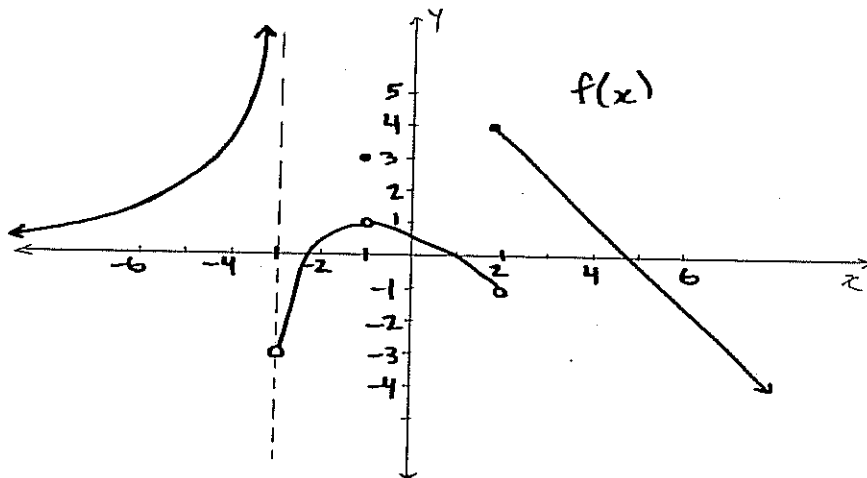
$$(c) \lim_{x \rightarrow (-3)} f(x) = DNE$$

# Quiz 2B, Business Calculus

Fall 2012

Name: Key

1. (2 points) Find the limits for the given graph. If the limit does not exist, write DNE.



(a)  $\lim_{x \rightarrow (-1)^+} f(x) = \left| \right.$

(b)  $\lim_{x \rightarrow (-1)^-} f(x) = \left| \right.$

(c)  $\lim_{x \rightarrow (-1)} f(x) = \left| \right.$

2. (4 points) Find the limits.

(a)  $\lim_{x \rightarrow 0} \frac{x^2 - 8}{x^3} = \frac{0^2 - 8}{0^3} = \frac{-8}{0}$  DNE

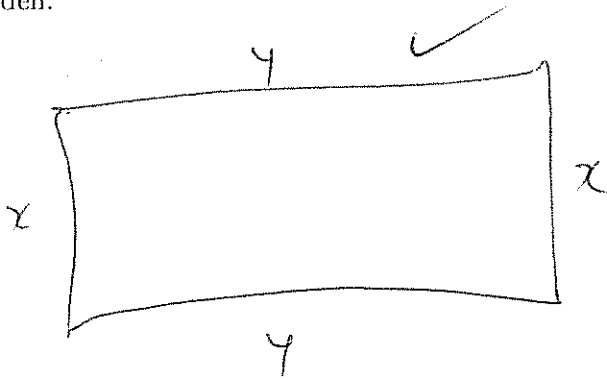
1.5

(b)  $\lim_{x \rightarrow 5} \frac{x^2 - 9x + 20}{x^2 - 2x - 15} = \lim_{x \rightarrow 5} \frac{(x-4)(x-5)}{(x-5)(x+3)} = \frac{5-4}{5+3} = \boxed{\frac{1}{8}}$

2.5

-0.5 if no  $\lim_{x \rightarrow 5}$  notation.

3. (4 points) Ellie wants to have a rectangular garden in her backyard with an area of  $240 \text{ ft}^2$ , and she wants to put a fence around it. Let  $x$  be the width of the garden. Write an equation (in terms of  $x$ ) for the amount of fencing she will need to go around the perimeter of the garden.



$$\text{Area} = \text{length} \cdot \text{width}$$

~~240~~

$$240 = xy \quad \checkmark$$

$$\Rightarrow \frac{240}{x} = y$$

$$2x + 2y = \text{Perimeter} \quad \checkmark$$

$$2x + 2\left(\frac{240}{x}\right) = P(x) \quad \checkmark$$

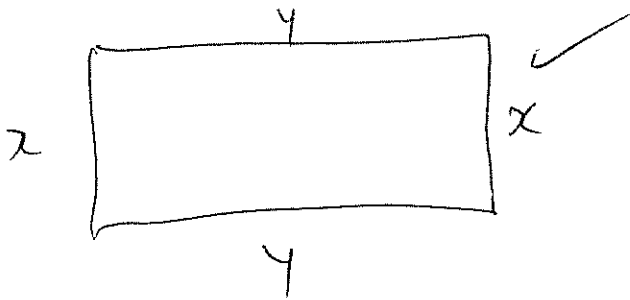
$$P(x) = 2x + \frac{480}{x}$$

# Quiz 2C, Business Calculus

Fall 2012

Name: Key

1. (4 points) Ellie wants to have a rectangular goat pen in her backyard with an area of 400 ft<sup>2</sup>, and she wants to put a fence around it. Let  $x$  be the width of the pen. Write an equation (in terms of  $x$ ) for the amount of fencing she will need to go around the perimeter of the pen.



$$\text{Area} = \text{length} \cdot \text{width}$$

$$400 = xy \quad \checkmark$$

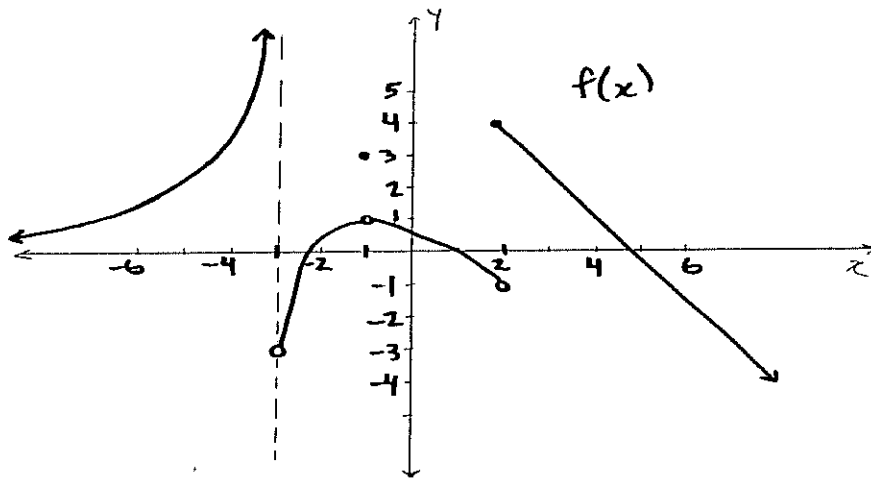
$$\Rightarrow \frac{400}{x} = y$$

$$\text{Perimeter} = 2x + 2y \quad \checkmark$$

$$P(x) = 2x + 2\left(\frac{400}{x}\right) \quad \checkmark$$

$$P(x) = 2x + \frac{800}{x}$$

2. (2 points) Find the limits for the given graph. If the limit does not exist, write DNE.



(a)  $\lim_{x \rightarrow 2^+} f(x) = 4$

(b)  $\lim_{x \rightarrow 2^-} f(x) = -1$

(c)  $\lim_{x \rightarrow 2} f(x) = \text{DNE}$

3. (4 points) Find the limits.

(a)  $\lim_{x \rightarrow 0} \frac{x^5 - 8x^2}{x^2} = \lim_{x \rightarrow 0} \frac{x^2(x^3 - 8)}{x^2} = \lim_{x \rightarrow 0} x^3 - 8 = \boxed{-8}$

-0.5 if no limit notation.

(b)  $\lim_{x \rightarrow 5} \frac{x^2 - 8x + 15}{x^2 - 10x + 25} = \lim_{x \rightarrow 5} \frac{(x-3)(x-5)}{(x-5)(x-5)} = \frac{2}{0}$

$\boxed{\text{DNE}}$