

**Quiz #1**

Name: \_\_\_\_\_

Math 140, Prof. Beydler

Wednesday, September 14, 2016

**Directions:** Show all work. No books or notes. A **scientific calculator** is allowed. Your desk and lap must be clear (no phones, notebooks, etc.). Write your answers in the indicated places, or box your answers. Good luck!

**Note:** If any limits are  $+\infty$  or  $-\infty$ , say so to get full credit.

1. (2 points) Find the following:

$$\lim_{x \rightarrow -1^+} \frac{x - 3}{x + 1}$$

Answer: \_\_\_\_\_

2. (2 points) Find the following:

$$\lim_{x \rightarrow \frac{1}{2}} \frac{2x^2 + 5x - 3}{2x - 1}$$

Answer: \_\_\_\_\_

3. (2 points) Find the following (be sure to show how you got your answer):

$$\lim_{x \rightarrow 5} \frac{x + 2}{x - 5}$$

Answer: \_\_\_\_\_

4. (2 points) Find the following (be sure to show how you got your answer):

$$\lim_{x \rightarrow \infty} \frac{x^3 - 2x^2 + 1}{5x^2 + 3x - 7}$$

Answer: \_\_\_\_\_

5. Let  $f(x) = \begin{cases} \frac{1}{x} & \text{if } x < 0 \\ 2x + 1 & \text{if } x \geq 0 \end{cases}$

a) (1 point) Find  $\lim_{x \rightarrow 0^+} f(x)$ .

Answer: \_\_\_\_\_

b) (1 point) Is  $f(x)$  continuous at  $x = 0$ ? Why or why not? (Be sure to use the definition of continuous.)

Yes    No    (circle one)

6. (1 point) List all values of  $x$  for which  $f(x) = \frac{2x-3}{x^2-9}$  is not continuous.

Answer: \_\_\_\_\_

7. (4 points) Based on the graph of  $f(x)$  shown to the right, find each of the following:

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

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

$$\lim_{x \rightarrow 2} f(x)$$

$$\lim_{x \rightarrow 4^-} f(x)$$

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

$$\lim_{x \rightarrow 4} f(x)$$

$$\lim_{x \rightarrow +\infty} f(x)$$

Is  $f(x)$  continuous at  $x = 3$ ?    Yes    or    No    (circle one)

