

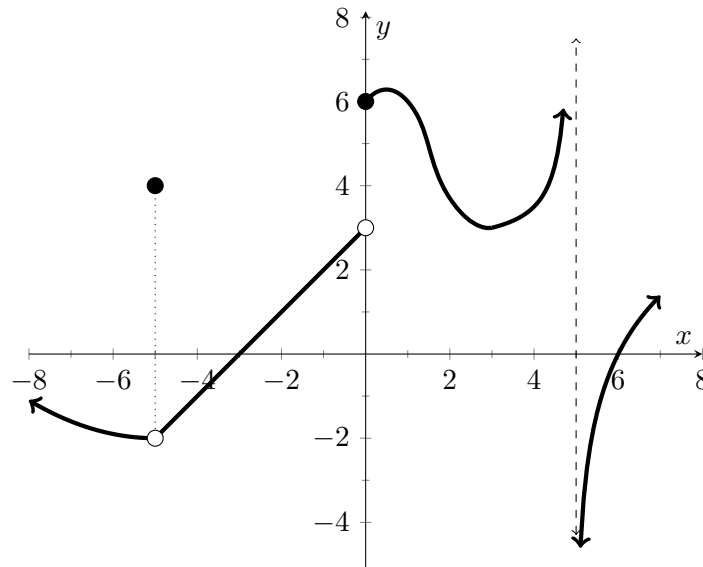
Math 251 Fall 2017

Quiz #2, September 6

Name: _____

There are 25 points possible on this quiz. This is a closed book quiz. Calculators and notes are not allowed. **Please show all of your work!** If you have any questions, please raise your hand.

Exercise 1. (9 pts.) Use the graph of the function of $f(x)$ to answer the following questions.



- | | | |
|--|--|--|
| 1. $\lim_{x \rightarrow -5} f(x) =$ _____ | 2. $\lim_{x \rightarrow 0} f(x) =$ _____ | 3. $\lim_{x \rightarrow 6} f(x) =$ _____ |
| 4. $f(-5) =$ _____ | 5. $f(0) =$ _____ | 6. $f(6) =$ _____ |
| 7. $\lim_{x \rightarrow 0^-} f(x) =$ _____ | 8. $\lim_{x \rightarrow 0^+} f(x) =$ _____ | 9. $\lim_{x \rightarrow 5^-} f(x) =$ _____ |

Exercise 2. (5 pts.) Evaluate the limit below and justify your answer. **Note:** The 5 points for this problem are distributed as: 1 point for the correct answer, 4 points for a clearly written justification using complete sentences.

$$\lim_{x \rightarrow 3^-} \frac{5 - x^2}{3 - x} = \boxed{}$$

Exercise 3. (6 pts.) The position of a car is given by values in the table below. Include units in your answers.

t (seconds)	0	1	2	3	4	5
s (feet)	0	11	32	70	119	179

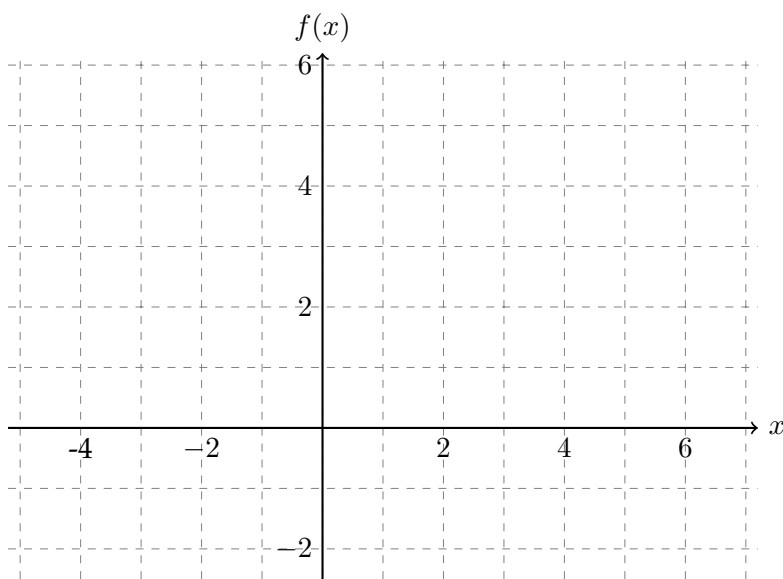
(a.) Find the average velocity of the car over the time interval $[3, 4]$.

(b.) Find the average velocity of the car over the time interval $[4, 5]$.

(c.) Give a rough estimate of the instantaneous velocity at $t = 4$.

Exercise 4. (5 pts.) On the axes below, sketch the graph of the function $f(x) = \begin{cases} |x + 2| & \text{if } x < 0 \\ x^2 + 1 & \text{if } 0 \leq x \leq 2 \\ 7 - x & \text{if } 2 < x. \end{cases}$

Use the graph to determine the values of a for which $\lim_{x \rightarrow a} f(x)$ does not exist and, for each a -value, justify your answer.



a-value	justification