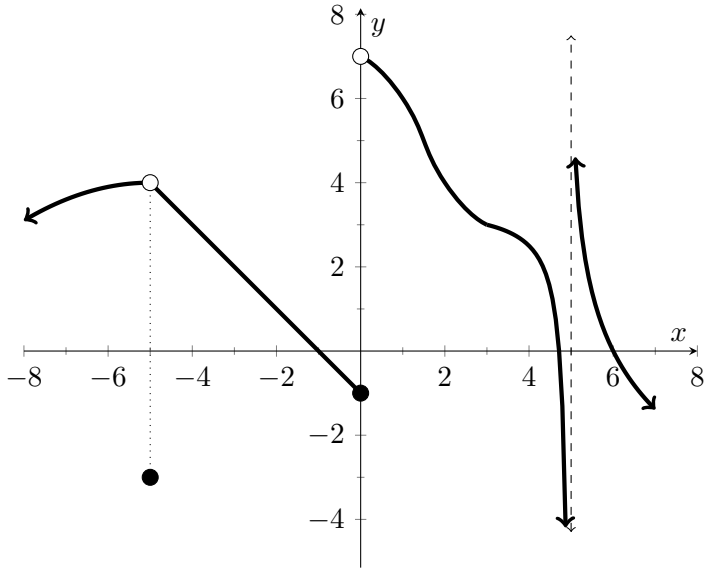
Math 251 Fall 2017 **Quiz #2, September 6**

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

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.

$$\lim_{x\to 1^-} \frac{3+x^2}{x-1} = \boxed{}$$

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

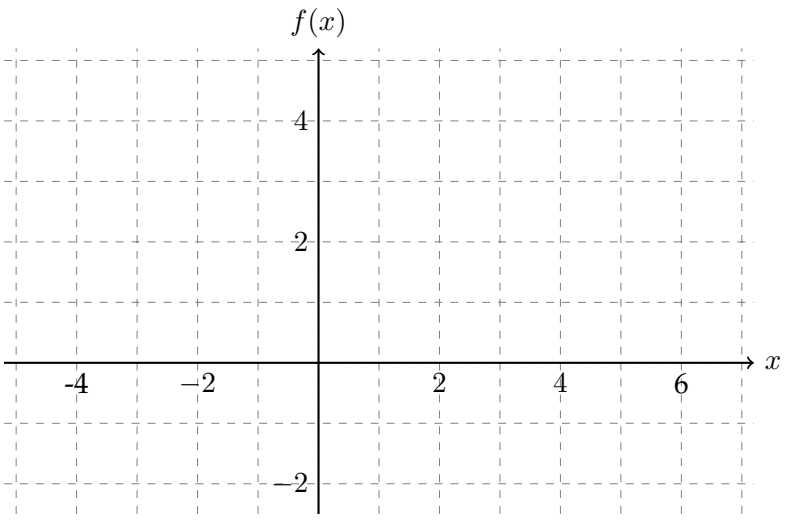
(a.) Find the average velocity of the car over the time interval $[2, 3]$.

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

(c.) Give a rough estimate of the instantaneous velocity at $t = 3$.

Exercise 4. (5 pts.) On the axes below, sketch the graph of the function $f(x) = \begin{cases} |x+2| & \text{if } x < 1 \\ (x-2)^2 & \text{if } 1 \le x < 3 \\ 7 - 2x & \text{if } 3 \le x. \end{cases}$

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



a-value	justification