Name: *Solutions*

MAC 2311 - Analytical Geometry and Calculus I
Quiz # 2, January 23, 2024

Problem 1 .
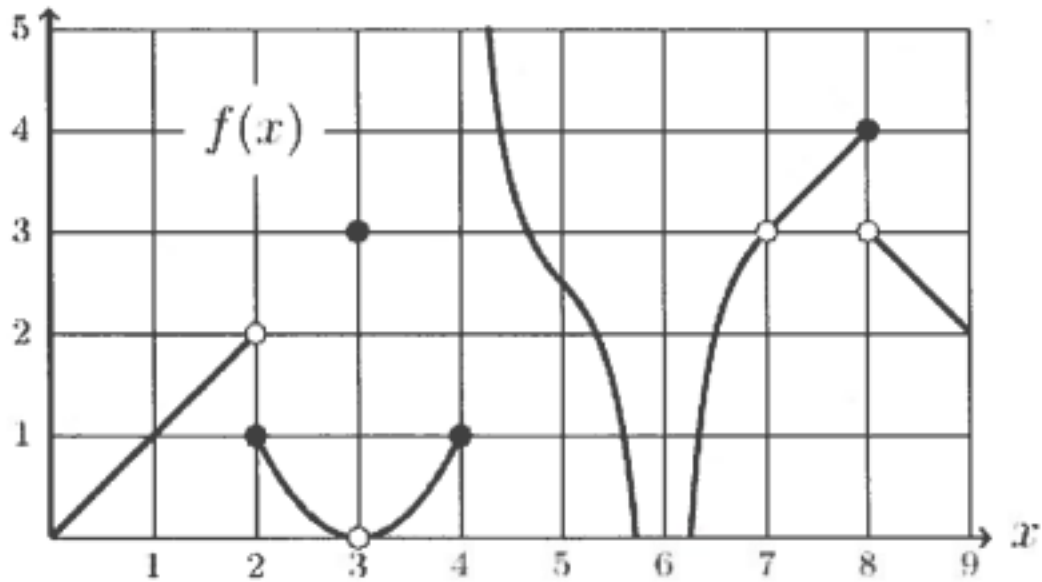Given the graph of a function f state the value of each quantity below:

Figure 1: Graph of f

(4 points)

1.
$$f(2) = 1$$

2.
$$\lim_{x \to 2^-} f(x) = 2$$

3.
$$\lim_{x \to 2^+} f(x) = 1$$

4.
$$\lim_{x \to 2} f(x) \quad DNE$$

5.
$$\lim_{x \to 6^-} f(x) = -\infty$$

6.
$$\lim_{x \to 4^-} f(x) = 1$$

7.
$$\lim_{x \to 8} f(x) \quad DNE$$

8.
$$f(8) = 4$$

Problem 2 .

Evaluate the following limits

(2 points)

1.

$$\lim_{x \to 0} \frac{8((x-3)^2 - 9)}{x}$$

$$\lim_{x \to 0} \frac{8(x^2 - 6x + 9 - 9)}{x} \quad (1\,point)$$

$$= \lim_{x \to 0} \frac{8x(x-6)}{x}$$

$$= \lim_{x \to 0} 8(x-6) = \underline{-48} \quad (1\,point)$$

(4 points)

2.

$$\lim_{x \to 0} \frac{\frac{1}{3+x} - \frac{1}{3}}{x}$$

Find common denominator: *(2 points)*

$$\lim_{x \to 0} \frac{3 - (3+x)}{3(3+x)} \cdot \frac{1}{x}$$

$$= \lim_{x \to 0} \frac{-x}{3(3+x)} \cdot \frac{1}{x} \quad (1\,point)$$

$$= \lim_{x \to 0} \frac{-1}{3(3+x)}$$

$$= \underline{\frac{-1}{9}} \quad (1\,point)$$