

MEMORIAL UNIVERSITY OF NEWFOUNDLAND
DEPARTMENT OF MATHEMATICS AND STATISTICS

SECTION 1.2

Math 1000 Worksheet

FALL 2023

For practice only. Not to be submitted.

1. Use the graph of $y = f(x)$ given in Figure 1 to determine each of the following. If the value of the function is undefined or the limit does not exist, indicate this (but label these limits as ∞ or $-\infty$ where appropriate).

- | | | |
|--------------------------------------|-------------------------------------|--------------------------------------|
| (a) $f(0)$ | (b) $\lim_{x \rightarrow 0^-} f(x)$ | (c) $\lim_{x \rightarrow 0^+} f(x)$ |
| (d) $\lim_{x \rightarrow 0} f(x)$ | (e) $f(3)$ | (f) $\lim_{x \rightarrow 3^-} f(x)$ |
| (g) $\lim_{x \rightarrow 3^+} f(x)$ | (h) $\lim_{x \rightarrow 3} f(x)$ | (i) $f(4)$ |
| (j) $\lim_{x \rightarrow 4} f(x)$ | (k) $f(-2)$ | (l) $\lim_{x \rightarrow -2^-} f(x)$ |
| (m) $\lim_{x \rightarrow -2^+} f(x)$ | (n) $\lim_{x \rightarrow -2} f(x)$ | |

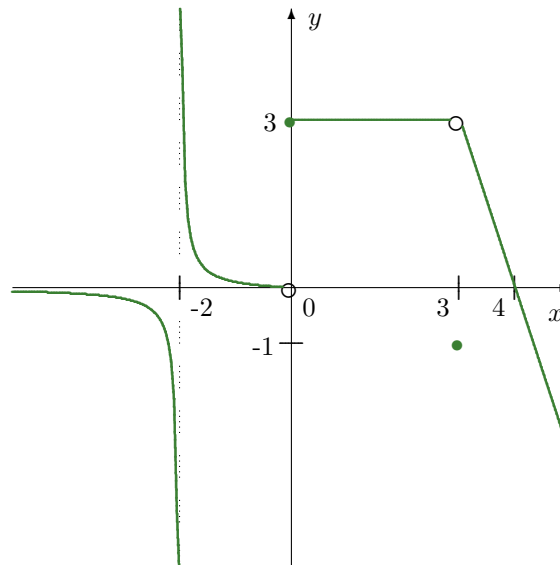


Figure 1: The graph of $y = f(x)$ for Question 1.

2. Sketch the graph of the function

$$f(x) = \frac{7x - |9x|}{4x}$$

and use it to determine each of the following.

- (a) $\lim_{x \rightarrow 0^-} f(x)$ (b) $\lim_{x \rightarrow 0^+} f(x)$ (c) $\lim_{x \rightarrow 0} f(x)$
(d) $\lim_{x \rightarrow 4} f(x)$ (e) $\lim_{x \rightarrow -\frac{6}{5}} f(x)$

3. Using a calculator, construct a table of values to deduce each limit.

- (a) $\lim_{x \rightarrow 4} \frac{2x^2 - 7x - 4}{3x^2 - 14x + 8}$
(b) $\lim_{x \rightarrow 0} \frac{\tan^2(x)}{\cos(5x) - 1}$
(c) $\lim_{x \rightarrow -1} \frac{3x^2 - 9x - 12}{x^3 + 7x^2 + 15x + 9}$
(d) $\lim_{x \rightarrow -3} \frac{3x^2 - 9x - 12}{x^3 + 7x^2 + 15x + 9}$