## MEMORIAL UNIVERSITY OF NEWFOUNDLAND DEPARTMENT OF MATHEMATICS AND STATISTICS

Section 1.6

Math 1000 Worksheet

Fall 2024

## For practice only. Not to be submitted.

1. Determine whether the function

$$f(x) = \begin{cases} \frac{x^2 + 4}{2x^2 + 4} & \text{if } x \le -2\\ \frac{x^2 - 4}{2x + 4} & \text{if } -2 < x \le 1\\ \frac{x^2 - 4}{x^2 - 9x + 14} & \text{if } x > 1 \end{cases}$$

is continuous at the indicated point. If it is not, classify the discontinuity as removable or non-removable.

- (a) x = -2
- (b) x = 1
- (c) x = 2
- 2. Find all values of the constant k which would make f(x) continuous at x = 1, given

$$f(x) = \begin{cases} \frac{x^2 + (k-1)x - k}{x-1} & \text{if } x \neq 1\\ 2k+3 & \text{if } x = 1. \end{cases}$$

3. Find all values of the constant k which would make f(x) continuous at x = 2, given

$$f(x) = \begin{cases} k^2 x - 5 & \text{if } x \ge 2\\ \frac{1}{x - 4} & \text{if } x < 2. \end{cases}$$

4. Find all values of the constant k which would make f(x) continuous at x = 0, given

$$f(x) = \begin{cases} \frac{\sqrt{kx^2 + 1} - 1}{3x^2} & \text{if } x \neq 0\\ k + \frac{5}{6} & \text{if } x = 0. \end{cases}$$