

MEMORIAL UNIVERSITY OF NEWFOUNDLAND

DEPARTMENT OF MATHEMATICS AND STATISTICS

SECTION 1.5

Math 1000 Worksheet

FALL 2023

For practice only. Not to be submitted.

1. Find both limits at infinity for the function $f(x) = \frac{x(x+1)(1-x)}{(2x+3)^2}$.

2. Identify all horizontal asymptotes (if any) of the given rational function.

(a) $f(x) = \frac{6x^3 - 6x^4}{2x^4 - x^2 + 1}$

(b) $g(x) = \frac{6x^2 - 2x + 5}{7x^3 + x^{\frac{3}{2}}}$

(c) $h(x) = \frac{(x+1)^3}{(4x^2+1)(2x-3)}$

3. Identify all horizontal asymptotes (if any) of the given quasirational function.

(a) $f(x) = \frac{x + \sqrt{4x^2 + 2}}{x - 7}$

(b) $f(x) = \frac{2x + 1}{5x - \sqrt{9x^2 - 4}}$

(c) $f(x) = \frac{2x + 1}{5x - \sqrt{25x^2 - 4}}$