MEMORIAL UNIVERSITY OF NEWFOUNDLAND

DEPARTMENT OF MATHEMATICS AND STATISTICS

SECTION 1.5 **Math 1000 Worksheet** FALL 2024

For practice only. Not to be submitted.

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

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

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

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

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

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

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

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

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