Math 131 - Quiz 11

Name _____

November 29, 2023

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (3 points) State the horizontal asymptote for the graph of each rational function. You don't need to show work.

   (a) $R(x) = \dfrac{3 - 8x^2 - 9x^4}{7x^4 + x^3 + 4x^2}$

   (b) $f(x) = \dfrac{x^3 - 2x}{x^3 - 5x}$

   (c) $h(x) = \dfrac{1000x^5 + 100}{x^6 + 1}$

2. (2 points) Explain very briefly how you know that the graph of $Q(x) = \dfrac{x^3 + x}{256x^2 + 512x + 1024}$ has no horizontal asymptote.

3. (5 points) Use any analytical method to compute each limit.

   (a) $\lim\limits_{x \to \infty} \dfrac{e^x}{x^2}$

   (b) $\lim\limits_{x \to 0^+} \dfrac{\ln x}{1/x}$