Math 1300 **Name:** _____
Fall 2025
Quiz 3

1. (6 points) Consider the function

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

(a) (2 points) Find the horizontal asymptote(s), if they exist.

Answer:

(b) (2 points) Find the vertical asymptote(s), if they exist.

Answer:

(c) (2 points) Determine whether $f(x)$ has any removable discontinuities (holes). If so, express each as an ordered pair in the form (x, y).

Answer:

2. (4 points) Use the limit definition of the derivative to find $f'(10)$, where

$$f(x) = \sqrt{x-1}.$$