

Quiz 3 Outline

Format. This quiz has **3 short-answer** questions and **1 free-response** question.

1. (6 points) Given a function $f(x)$, determine all horizontal asymptotes, vertical asymptotes, and removable discontinuities.

Example: Consider the function

$$f(x) = \frac{(2x^2 + 5x + 3)(x - 3)}{(x - 1)(x^2 - 9)}.$$

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

Answer:

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

Answer:

(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' at a given value.

Example (Spring 2022 Exam 1 #21): Use the limit definition of the derivative to find $f'(5)$, where

$$f(x) = \sqrt{2x - 1}.$$