Math 135, Calculus 1, Fall 2020

Written Homework 10-10

Directions: Write your solutions neatly and clearly, and submit to Canvas. In these problems, you should show all of your work in complete mathematical "sentences", writing complete English sentences when you explain your logic. You are free (and encouraged!) to work with others, but make sure the solutions you write up your solutions indepedently.

Exercise 1 (3 points). Evaluate the limit, if it exists.

$$\lim_{t \to 0} \left(\frac{1}{t} - \frac{1}{t^2 - t} \right).$$

Exercise 2 (3 points). Given the function

$$h(x) = \frac{|x - 2|}{x}$$

determine if $h(x)$ has horizontal asymptotes or vertical asymptotes. Explain your answer using the limit definition of horizontal asymptote and the limit definition of vertical asymptote.

Exercise 3 (4 points). A parking lot charges $4 for the first hour (or part of an hour) and $2 for each additioanl hour (or part), up to a daily maximum of $12.

    (a) Sketch a graph of the cost of parking at this lot as a function of the time parked there.
    (b) Discuss the discontinuities (and left- and right-continuities) of this function, and their significance to someone who parks in the lot.