MA 137 Worksheet #25

Section 6.1

11/17/20

1. The velocity of a train at several times is shown in the table below. Assume that the velocity changes linearly between each time given.

$t =$ time in minutes	0	3	6	9
$v(t) =$ velocity in Km/h	20	80	100	140

   (a) Plot the velocity of the train versus time.

   (b) Compute the left and right-endpoint approximations to the area under the graph of v.

   (c) Explain why these approximate areas are also an approximation to the distance that the train travels.

2. Let $f(x) = \dfrac{1}{x}$. Divide the interval $[1, 3]$ into five subintervals of equal length and compute R_5 and L_5, the left and right endpoint approximations to the area under the graph of f in the interval $[1, 3]$. Is R_5 larger or smaller than the true area? Is L_5 larger or smaller than the true area?

3. Let $f(x) = \sqrt{1 - x^2}$. Divide the interval $[0, 1]$ into four equal subintervals and compute L_4 and R_4, the left and right-endpoint approximations to the area under the graph of f. Is R_4 larger or smaller than the true area? Is L_4 larger or smaller than the true area? What can you conclude about the value π?