Student Name:_____ Student Number: _____ Serial No.:_____

Instructor: M. Z. Abu-Sbeih Math - 132.1 Quiz No. 3 Date: 24-3-2016.

Question 1: Consider the function $y = f(x) = \frac{x-1}{x^2}$ with $f'(x) = \frac{2-x}{x^3}$ and $f''(x) = \frac{2(x-3)}{x^4}$

a. (2 Points) Find the asymptotes if any exist.

Horizontal:

Vertical:

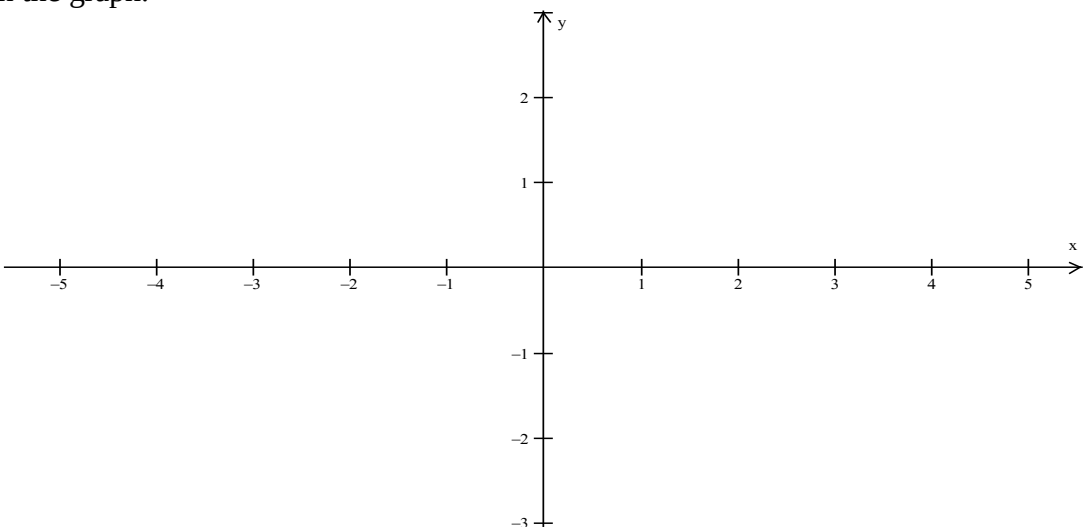
b. (2 Points) Find the critical numbers.

c. (6 Points) Find intervals where the function is increasing and those where it is decreasing.

d. (2 Points) Find the local maximum and minimum of the function.

e. (7 Points) Discuss the concavity of the function and find the infection points.

f. (9 Points) Sketch the graph of the function. Clearly indicate the **critical numbers**, **extrema** and **inflection points** on the graph.



g. (2 points) Find the absolute extrema of the function on the interval [1,4] if any exists.

Question 2 (10 points): An agronomist wishes to fence four rectangular plots for experimentation as shown in the figure. If each plot must contain 1000 m^2, find the minimum amount of fencing that can be used.