KFUPM – Math 132– Test 2

Name : ..... **ID** #.....Serial #: .....

Question 1: Use the graph of $y = g(x)$ to find

- where the function is increasing:
- where the function is decreasing:
- the critical values:
- where the function is concave up:
- where the function is concave down:
- the x values of inflection points:
- its absolute maximum:
- its absolute minimum:
- its local maximum:
- its local minimum:

Question 2: Consider $g(x) = x^3 - 3x + 1$ in the interval $[-2, 2]$. Find

- its domain:

- its critical values:

- its absolute maximum and its absolute minimum:

- where it's increasing:

- where it's decreasing:

- where it's concave up:

- where it's concave down:

- the x value(s) of its inflection points:

- its local maximum:

- its local minimum:

Question 3: Find the 103 derivative of

$$y = \sin\left(\frac{x}{10}\right).$$

Question 4: Use logarithmic differentiation to find the first derivative of

$$f(x) = \frac{x\sqrt{2x-1}}{(x-1)\sqrt{x-6}}.$$

Question 5: Use implicit differentiation to find y' of

$$x^3y + y^3 = y^2.$$