Mathematics 122

Quiz 18 Name: Key.

You must show your work to get full credit.

1. For the function

$$f(x) = (x^3 - 4x^2 + 1)e^{-x/2}$$

with $0 \le x \le 15$ find the following:

Maximum 9.683 Maximizer 6.4051

Minimum −1.213 Minimizer 1.0

and explain what you did on calculator and include a sketch of the graph.

Y1 = (X^3 − 4X + 1)e^(−X/2)

Xmin = 0

Xmax = 15

ZoomFit

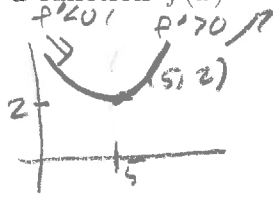
2nd calc 4: maximum

X = 6.4051 Y = 9.6828

2nd calc 5:

X = .999998 Y = −1.213

2. (a) Draw the graph of a function $f(x)$ with $f(5) = 2$, $f'(5) = 0$, $f'(x) < 0$ for $x < 5$ and $f'(x) > 0$ for $x > 5$.

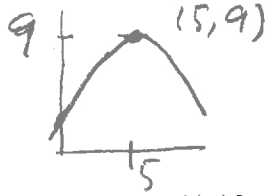


(b) What is the minimizer of $f(x)$? Minimizer is 5

(c) What is the minimum of $f(x)$? ~~Minimizer~~ minimum is 2

3. Graph a function $h(x)$ with $h(5) = 9$, $h'(5) = 0$ and $h''(x) < 0$.

concave down



(a) What is the maximizer of $f(x)$? Maximizer is 5

(b) What is the maximum of $f(x)$? Maximum is 9