KEY

Math 125-Quiz 25
November 18, 2011

You have 10 minutes to complete this quiz. You may use a calculator for arithmetic only. Be careful about justifying your answers and showing your work.

1. For each function below, find critical values, as well as intervals where f is increasing and decreasing. State whether each critical value is a local max, a local min, or neither.
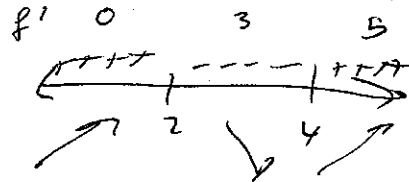
(a) $f(x) = x^2 - 2x$

$f'(x) = 2x - 2 = 0$

$x = 1$
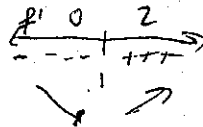
$x = 1$ is a local min

(b) $f(x) = \frac{1}{3}x^3 - 3x^2 + 8x + 2$

$f'(x) = x^2 - 6x + 8 = 0$

$(x - 2)(x - 4) = 0$

$x = 2, 4$

$x = 2 \rightarrow$ local max

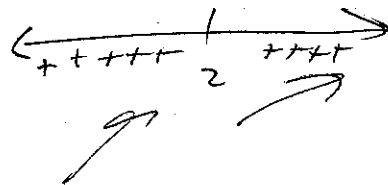$x = 4 \rightarrow$ local min

(c) $f(x) = \frac{1}{3}x^3 - 2x^2 + 4x + 2$

$f'(x) = x^2 - 4x + 4$

$= (x - 2)^2 = 0$

$x = 2$

$x = 2$ is neither a max nor a min