Mathematics 122

Quiz #23 Name: Key

You must show your work to get full credit.

1. Let $f(x) = x^3 - 12x + 1$.

(a) Find the critical points.

solve

$f'(x) = 3x^2 - 12$

$= 3(x^2 - 4)$

$= 3(x-2)(x+2) = 0$

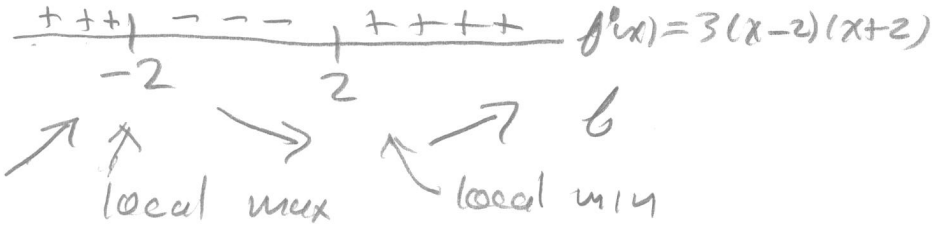
$x = 2, -2$

Critical points are: 2, -2

(b) Classify the critical points as to being local maximizers or local minimizers.

The local maximizers are: -2

Method 1



The local minimizers are: 2

Method 2

$f''(x) = 6x$

$f''(-2) = -12 < 0$ concave down ∩ so local max

$f''(2) = 12 > 0$ concave up ∪ so local min