Math 171 - Quiz 8

October 25, 2012

Name key

Score _____

Show all work to receive full credit. Supply explanations when necessary. This quiz is worth 10 points.

Let $f(x) = x - 2\sin x$ on $[-2, 3]$. Find open intervals on which f is increasing/decreasing. Identify all relative and absolute extreme values.

$f'(x) = 1 - 2\cos x$

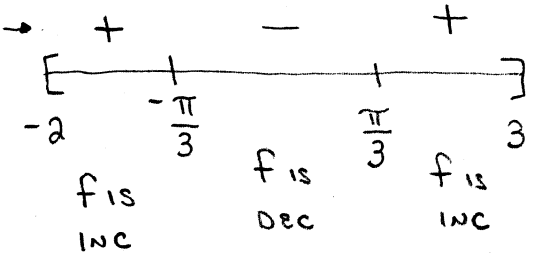
$f'(x)$ DNE NEVER ON $[-2,3]$

$f'(x) = 0 \Rightarrow \cos x = \frac{1}{2}$

$\Rightarrow x = \frac{\pi}{3}, \; x = -\frac{\pi}{3}$

ENDPOINTS: $x = -2, \; x = 3$

SIGNS OF f' →



f IS INCREASING ON $(-2, -\frac{\pi}{3}) \cup (\frac{\pi}{3}, 3)$

f IS DECREASING ON $(-\frac{\pi}{3}, \frac{\pi}{3})$

$f(-\frac{\pi}{3}) \approx 0.68485$ IS A REL MAX

$f(\frac{\pi}{3}) \approx -0.68485$ IS A REL MIN AND THE ABS MIN

$f(-2) \approx -0.18141$

$f(3) \approx 2.71776$ IS THE ABS MAX