M 171 A Fall 2009 Hw 5

What got graded: §4.1 # 38, 48

(38) Find the critical #'s of $g(x) = \sqrt{1-x^2}$.

Soln:

$$g'(x) = \frac{1}{2\sqrt{1-x^2}} \cdot -2x = \frac{-x}{\sqrt{1-x^2}}.$$

So $g' = 0$ when $x = 0$

and g' is undefined at $x = \pm 1$.

(48) Find the absolute max/min values on $[-1, 4]$ of $f(x) = x^3 - 6x^2 + 9x + 2$.

$$f'(x) = 3x^2 - 12x + 9 = 3(x^2 - 4x + 3).$$

$f' = 0$ when $x = 3, 1$.

Check the values of f when $x = -1, 1, 3, 4$:

$f(-1) = -14$, $f(1) = 6$, $f(3) = 2$, $f(4) = 6$

Abs. min. Abs. Max. Abs. Max.