

## Soln to Exercise 55, Section 4.1

$$f(t) = 2\cos t + \sin 2t \quad \text{on } [0, \pi/2]$$

$$f'(t) = -2\sin t + 2\cos 2t$$

here was my error in class

$$0 = -2\sin t + 2(1 - 2\sin^2 t)$$

$$= -2\sin t + 2 - 4\sin^2 t$$

$$= -2(2\sin^2 t + \sin t - 1)$$

$$= -2(2\sin(t) - 1)(\sin(t) + 1)$$

$$\sin t = \frac{1}{2}$$

only soln in  $[0, \pi/2]$   
is  $t = \pi/6$

$$\sin(t) = -1$$

no  
any soln in  $[0, \pi/2]$

So, only crit # in  $[0, \pi/2]$  is  $t = \pi/6$

$t$	$f(t)$
0	$2\cos(0) + \sin(0) = 2$
$\pi/6$	$2\cos(\pi/6) + \sin(2\pi/6) = \sqrt{3} + \sqrt{3}/2 = \frac{3\sqrt{3}}{2}$ (max)
$\pi/2$	$2\cos(\pi/2) + \sin(2\pi/2) = -1$ (min)

abs max occurs @  $x = \pi/6$

abs min occurs @  $x = \pi/2$