HW 4.2  #7 and #23

1. Graph

First part decreasing $\rightarrow$ increasing

The point would be least at its flattest point.

C

$(50, 3000)$ 1st point
$(0, 1000)$ 2nd point

$M = \frac{3000 - 1000}{50 - 0}$

$= \frac{2000}{50} = 40$

23. Total Cost $(TC) = \text{Variable Cost (VC)} + \text{Fixed Cost (FC)}$

Part a

Bic is a discount

$10,000 \sqrt{x}$

2.1 million $(x)$

Step 1

$C(x) = -10,000 \sqrt{x} + 2.1x$

$C'(x) =

\Delta \rightarrow x \frac{1}{2}$

So $\frac{1}{2} (10,000) x^{-\frac{1}{2}} + 2.1 \rightarrow \Delta \rightarrow 2,100,100$

Step 2

$C(x) = 2,100,000 x - 10,000 x^{\frac{1}{2}} = \text{Total cost}$

$C'(x) = 2,100,000 - \frac{1}{2} (10,000) x^{-\frac{1}{2}} = \text{Marginal cost}$

\[= 2,100,000 - \frac{5,000}{\sqrt{x}}\]

Step 3

Average Cost $= \frac{C(x)}{x}$

$\frac{TC}{\# \text{of Items}}$ or $\overline{C}(x)$

$\overline{C}(x) = 2,100,000 x - 10,000 x^{\frac{1}{2}} = \text{Average cost}$

Part b

$C'(3) = (2,100,000) - (5,000/13) = 2,097,113.25$

$\overline{C}(3) = 2,100,000(3) - 10,000(3)^{\frac{1}{2}} = 2,094,220$

Cost of first 3 commercials

4th Commercial

Avg cost of first 3 commercials