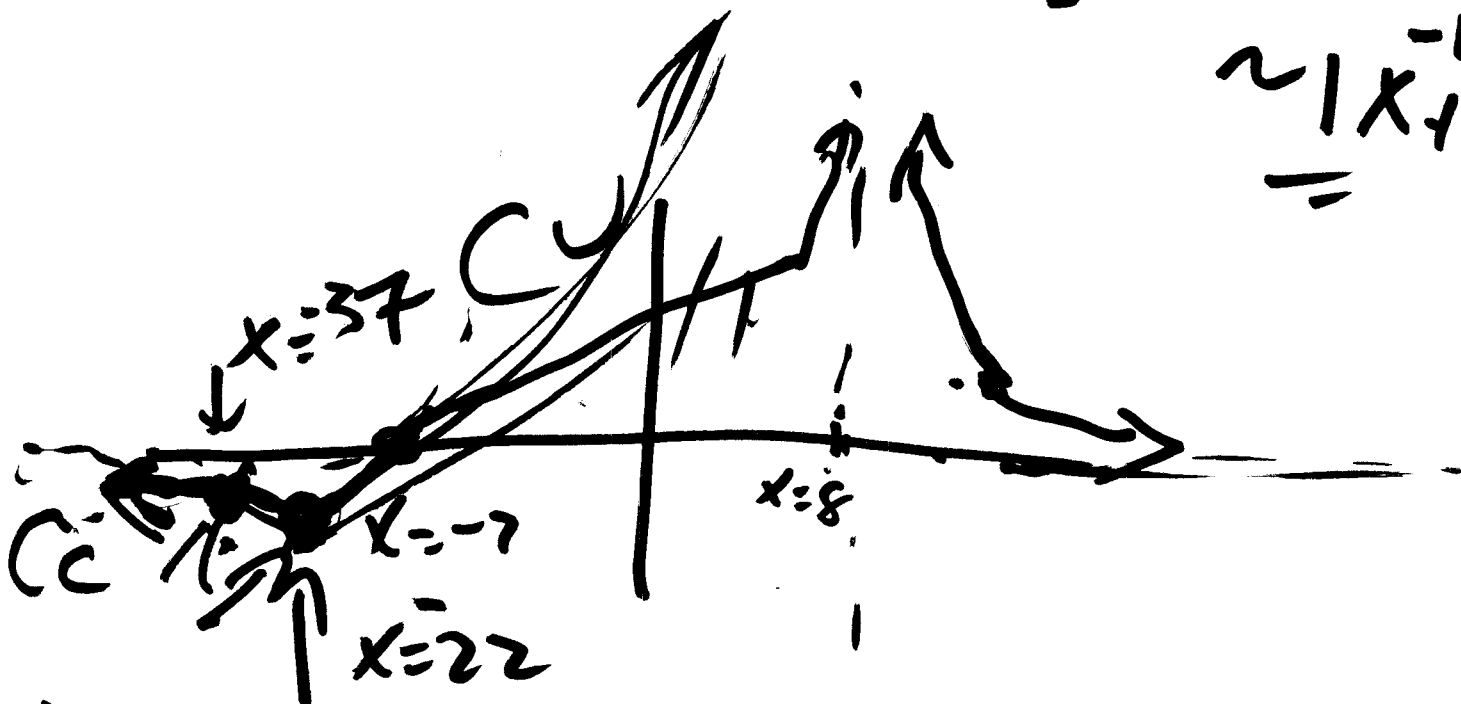


11/1

$$y = \frac{(x+7)}{(x-8)^2} = \frac{(x-7)'}{(x-8)^2} = \frac{1x+...}{x^2, ...}$$

$$\sim \frac{1}{x^2}$$



$$f'(x) = \frac{(x-8)'(1) - (x+7)(-2)(x-8)^{-3}}{(x-8)^6} = \frac{[x-8-2x-14]}{(x-8)^3}$$

$$= \frac{-x-22}{(x-8)^3} = 0 \quad x = -22 = \frac{(x+22)}{(x-8)^3}$$

$$f''(x) = \frac{(x-8)^{-3} - (x+22) \cdot 3(x-8)^{-4}}{(x-8)^6} = \frac{[x-8-3x-66]}{(x-8)^4}$$

$$\begin{aligned} f''(x) &= - \frac{[-2x - 74]}{(x-8)^4} \\ &= \frac{2x + 74}{(x-8)^4} > 0 \end{aligned}$$

On $[a, b]$



$$f' < 0$$

f is increasing

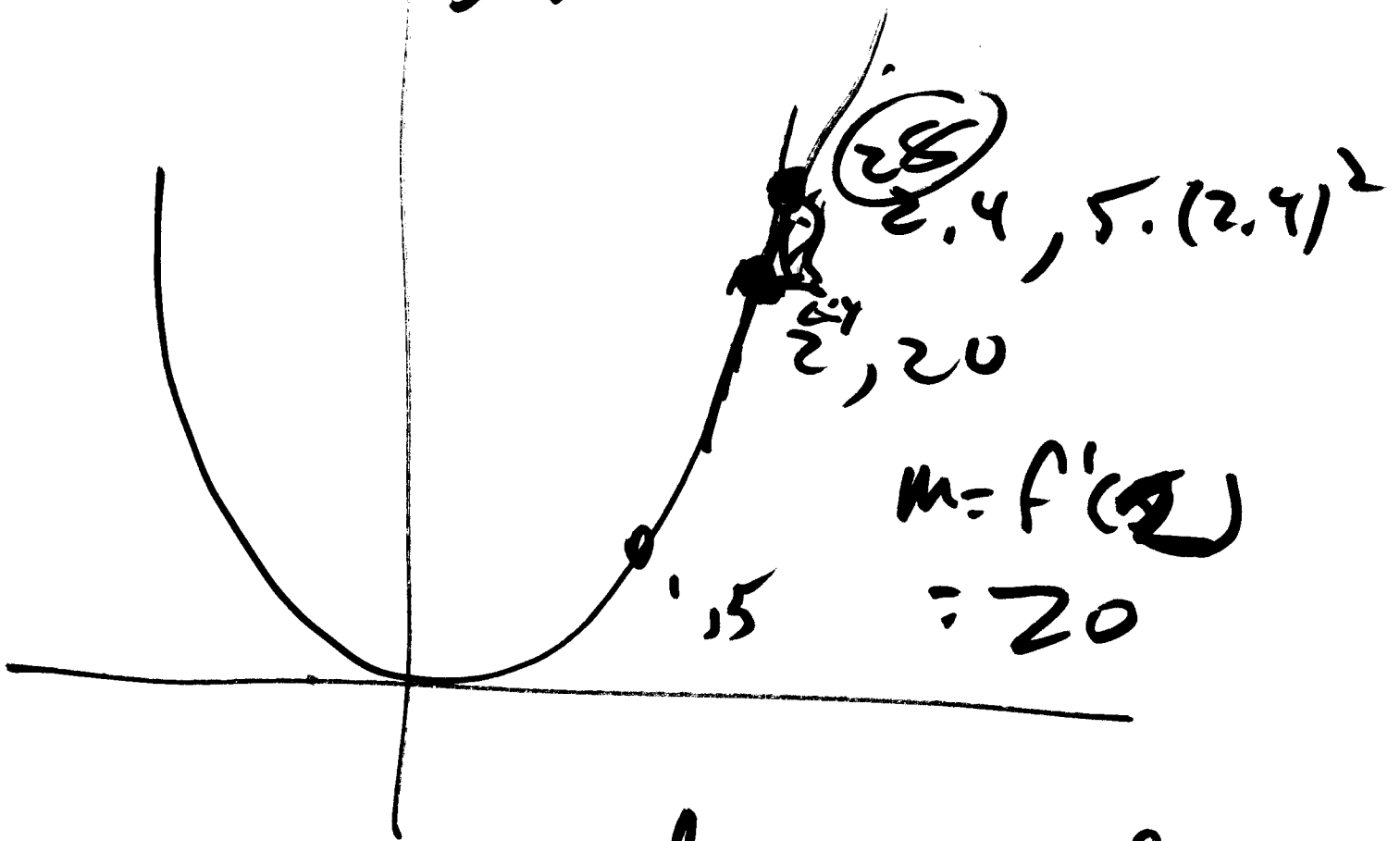
$$f'' > 0, f \text{ is concave up}$$

f is decreasing

f is concave up

$$y = 5x^2$$

$$f'(x) = 10x$$



$$dy = 24 \cdot dx$$

$\frac{1.32}{\text{min}} \quad \frac{.4}{\text{min}}$

price $50 - .6x$

sell x

$-15x$ labor

$-100,000$

In a month $100,000$ factory rent

Sell $x=1$ 1000 umbrellas at $50 - .6 \cdot 1$
 $= 49.40$ ea

make 49,400 revenue pay 15000 labor

Sell $x=10$ 10,000 at $50 - .6 \cdot 10 = 44$

make 440,000 pay 150,000 labor

Net profit 190,000 $= 440,000 - 150,000 - 100,000$

Sell $x=40$

$50 - .2x = 26 \times 40 = 1040,000 - 600,000 - 100,000$ \$ Good

$P = x(50 - .6x) - 15x - 100$ in thousands per month