

PC30S Max/Min Problems (Revenue) $\text{Revenue} = (\# \text{ of buyers})(\text{cost/item})$
 n is the # of increases/decreases

1.) A student newspaper has 500 ^{original} subscribers who pay \$6.00 ^{original} /year. For every \$0.25 ^{change} decrease they would sell 50 more subscriptions. Find the maximum revenue possible and the price at which this would occur.

Let n be # of increase/decreases

$$R = (500 + 50n)(6.00 - 0.25n)$$

$$R = 3000 - 125n + 300n - 12.5n^2$$

$$R = -12.5n^2 + 175n + 3000$$

Vertex formula

$$n = \frac{-b}{2a}$$

$$= \frac{-175}{2(-12.5)}$$

$$= 7$$

price $6.00 - 0.25(7)$
\$4.25

$$R = (500 + 50(7))(\$4.25)$$

$$= \$3612.50$$

max revenue at a price of \$4.25/yr

decreases in cost

2.) Sponsors of a design show believe 600 people will attend if the price is \$6.00 per ticket. They assume that 25 fewer people would attend for each \$0.50 increase in price. Find the price that will produce a maximum revenue. How many people would attend?

Let n be # of increases/decreases

don't forget $\rightarrow R = (600 - 25n)(6.00 + 0.50n)$

opposite signs

$$R = 3600 + 300n - 150n - 12.5n^2$$

$$= -12.5n^2 + 150n + 3600$$

$$n = \frac{-b}{2a}$$

$$= \frac{-150}{2(-12.5)}$$

$$= 6$$

label ans

price $6.00 + 0.50(6)$
\$9.00

of ppl $600 - 25(6)$
450

Worksheet

1) \$7350

2) \$30

3) \$0.70

4) \$500

5) \$14