**Quadratic Optimization**

1. The manager of a television set factory calculates that average cost of manufacturing *x* televisions per week is given by the function  per television. Determine how many televisions should be made each week to minimize production costs.
2. A cattle rancher wants to construct six identical holding pens as shown in the diagram below:

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| --- | --- | --- |
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If she can afford to purchase only 1,800 meters of fencing materials,

what is the maximum possible area for each holding pen?

1. A manufacturer of washing machines determines that the cost of manufacturing *n* washing machines per week is given by the

equation  *per washing machine*. The total income for

selling *all of the washing machines* is .

1. Determine the profit function for this scenario.
2. Determine the number of washing machines to be manufactured in order to maximize the profits.
3. Rick operates a business selling sunglasses at a kiosk near a popular beach area. His average income is $20 per pair of sunglasses, and he sells an average of 30 pairs per day. In analyzing his sales records for a two-month period, Rick discovered that for every $1 increase in the average price of his product, he loses 2 sales per day.
4. Determine the average price per pair of sunglasses that will maximize Rick’s daily revenue.
5. What will his daily revenue be at this price?