1)   A large rectangular field with an area of 19600 square meters must have a fence on all four sides. Currently there is a fence on one side and no additional fence needs to be added on that side. Materials for the two sides adjacent to the current fence costs $4 per meter and materials for the side opposite the current fence cost $2.50 per meter. Find the cost of the least expensive fence. Round your answer to the nearest dollar.
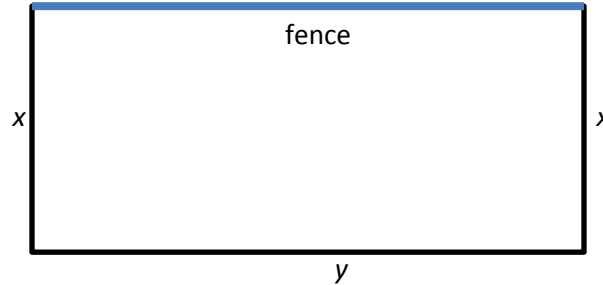
2)      A real estate office handles a 50-unit apartment complex.  When the rent is $580 per month, all units are occupied.  For each $40 increase in rent, however, an average of one unit becomes vacant.  Each occupied unit requires an average of $45 per month for service and repairs.  What rent should be charged to obtain a <u>maximum profit</u>?

$n$ = number of $40 increases in rent
new rent/unit =
new number of occupied units =
cost of service and repairs/month = 45(number of occupied units)=

3)    A power station is on one side of a river that is 0.5 mile wide (2640 feet), and a factory is 6 miles (31680 feet) downstream on the other side of the river.  It costs $6 per foot to run  overland power lines and $8 per foot to run underwater power lines.  Write a cost function for running the power lines from the power station to the factory.  Estimate the value of $x$ that minimizes the cost of the power lines.  (Round the value of $x$ to 2 decimal places, nearest hundredth of a mile.)
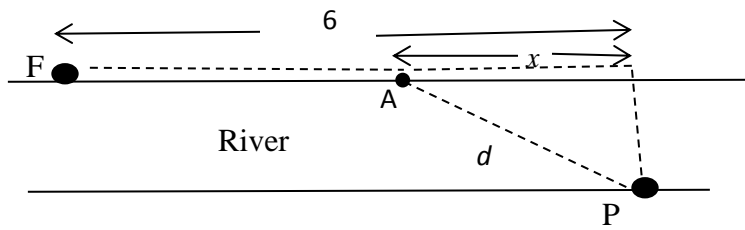


Cost = cost over land between point $F$ and $A$ + cost under river between point $A$ and point $P$

3

4)    A net enclosure for golf practice is open at one end.  The volume of the enclosure is 144  cubic meters. Find the approximate dimensions that require the smallest amount of netting (minimum total area or netting).  Note that netting is only needed at the back of the enclosure, top of the enclosure and each side of the enclosure.  (See picture below.)

Minimize the amount of netting.
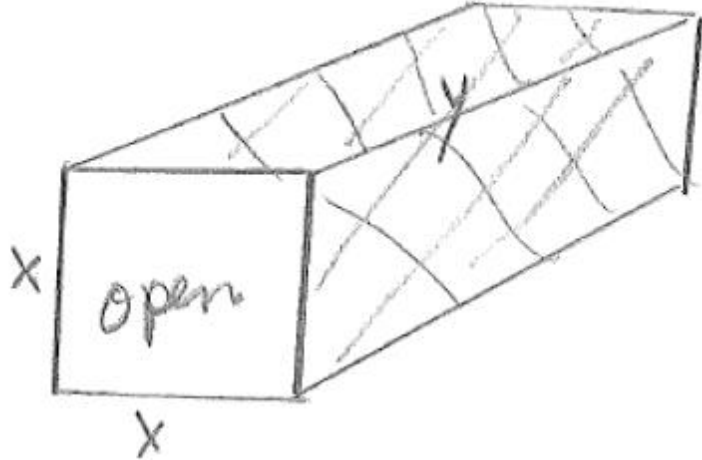


Netting area = area of the back + area of two sides + area of top

5)    A business sells 2000 units of a product per month at a price of $10 each.  It can sell 250  more items per month for each $0.25 reduction in price.  What price per unit will maximize the monthly revenue?

Revenue is to be maximized.