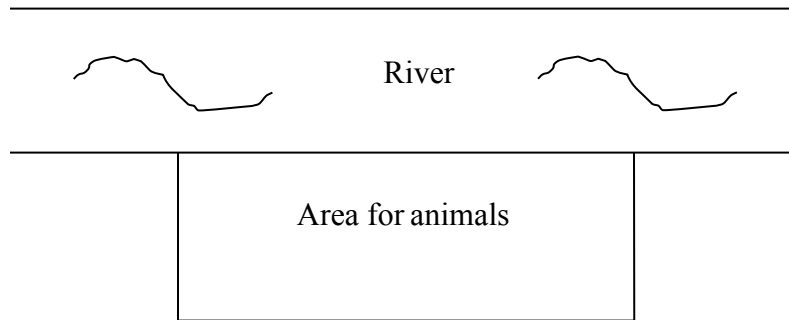


MAT 102 Spring 2008
Handout 1 – Examples for Optimization

1. A farmer has 40 yards of fencing and wants to make a rectangular animal farm along a river as in the figure:



- What should the dimensions of the fence be to give the farmer the largest area for his animals?
2. Suppose a bank can invest deposited funds at 7% interest. If the amount of money deposited in the bank is proportional to the interest $r\%$ it pays to the depositors, and if the state law requires that at least 4% of interest must be paid to the depositors, what value of r should the bank set to maximize its profit?
 3. A lumber company finds that if not more than 30 trees are planted on each square meter of land, then each tree will grow 2 meters per year. For each tree planted beyond 30, the average growth will be reduced by 0.1 meter per year. How many trees should be planted per square meter to maximize the lumber production?