

- 1.] What two positive real numbers with a product of 50 have the smallest possible sum?
- 2.] Of all boxes with a square base and a volume of 100 m^3 , which one has the smallest minimum surface area?
- 3.] Find the point on the line $y = 3x$ that is the closest point to $(50, 0)$. What is the least distance from this point to $(50, 0)$?

-
- 4.] You work for a company that makes jewelry boxes. Your boss tells you that each jewelry box must have a square base and an open top and that you can spend \$3.75 on the materials for each box. The people in production tell you that the material for the sides of the box costs 2 cents per square inch while the reinforced material for the base of the box costs 5 cents per square inch. What is the largest volume jewelry box that you can make and still stay within budget?
- 5.] A length of wire of length 60 ft is cut, and the resulting two pieces are formed to make a circle and a square. Where should the wire be cut to (a) minimize and (b) maximize the combined area of the circle and square?