

Math 2A Worksheet: 4.7 Optimization

Write your names and Student ID numbers at the top of the page

1. Find 2 numbers whose difference is 100 and whose product is a minimum.
2. A farmer wants to fence in a rectangular plot of land adjacent to the north wall of his barn. No fencing is needed along the barn, and the fencing along the west side of the plot is shared with a neighbor who will split the cost of that portion of the fence. If the fencing costs 20 dollars per linear foot to install and the farmer is not willing to spend more than 5000 dollars, find the dimensions for the plot that will enclose the most area.

3. A box with a square base and open top must have a volume of $32,000 \text{ cm}^3$. Find the dimensions of the box that minimize the amount of material used.

4. Find the point on the curve $y = \sqrt{x}$ that is closest to the point $(3, 0)$.