A company has started selling a new type of smartphone at the price of $\$110 - 0.05x$ where x is the number of smartphones manufactured per day. The parts for each smartphone cost \$50 and the labor and overhead for running the plant cost \$6000 per day. How many smartphones should the company manufacture and sell per day to maximize profit? (Remember that Profit = Revenue - Cost)

A rancher wants to construct two identical rectangular corrals using 200 ft of fencing. The rancher decides to build them adjacent to each other, so they share fencing on one side. What dimensions should the rancher use to construct each corral so that together, they will enclose the largest possible area?

A cryptography expert is deciphering a computer code. To do this, the expert needs to minimize the product of a positive rational number and a negative rational number, given that the positive number is exactly 8 greater than the negative number. What final product is the expert looking for?

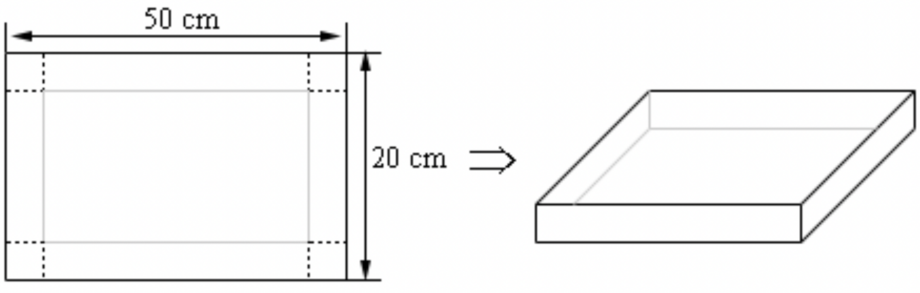
Which point on the graph of $y = \sqrt{x}$ is closest to the point $(5, 0)$?

A geometry student wants to draw a rectangle inscribed in a semicircle of radius 8. If one side must be on the semicircle's diameter, what is the area of the largest rectangle that the student can draw?

Let x and y be two positive numbers such that $x + 2y = 50$ and $(x + 1)(y + 2)$ is a maximum.

We have 45 m^2 of material to build a box with a square base and no top. Determine the mensions of the box that will maximize the enclosed volume.

We have a piece of cardboard that is 50 cm by 20 cm and we are going to cut out the rners and fold up the sides to form a box. Determine the height of the box that will give a maximum volume.



2. Find two positive numbers whose product is 750 and for which the sum of one and 10 times the other is a minimum.