MA 16010 Lesson 25: Optimization III

Exercise: An open box is to be made such that its volume is $20\,\mathrm{m}^3$. The sides are to be made of wood and its base is to be made of metal. Additionally, the length of the box should be twice its width.

If the cost of wood is $5\,\$/\mathrm{m}^3$ and the cost of metal is $8\,\$/\mathrm{m}^3$, find the minimal cost of the box.

Exercise: A product can be sold for the price $\$\,p$, and at this price, q units of the product will be sold where $q = 3000 - 200p$. The cost of producing one unit is $\$\,10$.

(a) Maximize revenue.

(b) Maximize profit.

Exercise: Find the point (x, y) lying on the parabola $y = x^2$ that is closest to the point $(0, 4)$.