

Calculus 41G Max/ Min Worksheet

1.) Find the maximum and minimum values of the function determined by

a.) $x^2 - 7x + 10 - \frac{9}{x}$

b.) $y = x^3 + 2x^2 + x - 6$

2.) Show that the function given by $y = x(x^2 - 3x + 4)$ has no maxima or minima for real values of x .

3.) A rectangular metal box without a lid is made from a sheet of tin 16 cm by 6 cm. Equal squares are cut from each of the four corners of the tin sheet, and the edges are turned up and soldered to form the box. Find the dimensions of the box of maximum volume, and find the maximum volume.

4.) The area of a rectangle is 64 cm^2 . What are the dimensions if the perimeter is a minimum?

5.) Find two natural numbers such that their sum is 16 and their product is a maximum.

6.) Find two natural numbers whose sum is 15 such that the sum of their squares is a minimum.

7.) A charter bus company advertises a trip for a group of people as follows: At least 20 people must sign up. The cost when 20 participate is \$80 per person. The price will drop by \$2 per ticket for each member of the traveling group in excess of 20. If the bus can accommodate 28 people, how many participants will maximize the company's revenue?