

Problem statement A rectangular box with an open top has a square base. The sides are made of cardboard, costing 3 cents per square foot. The base is made of plywood, costing a half dollar per square foot. The box should have a capacity of no more than 10 cubic feet and no less than 2 cubic feet. At the same time, due to limitations of construction, no edge of the box should be shorter than 3 inches or longer than 36 inches. Find a plausible domain for the dimensions of the box based on these specifications and describe the domain carefully, algebraically. Sketch the domain in \mathbf{R}^2 . (You *must* give a complete algebraic description of the domain, however. The picture is *not* a substitute for this description.) Write a formula for a function which calculates the cost of the materials in each possible box.