

Math 229

Quiz 4

Due: 03/23/2007

Name: _____

This is a Take-Home Quiz. You may use your book and course notes, and you may consult with other members of the class, but you may not consult with outside tutors (at least not on these specific problems).

1. (6 points) A shipping company makes a cardboard carton that has length 11", width 19.25", and height 4".
 - (a) Find the volume and surface area of this carton.

- (b) Find the dimensions of a carton with the same volume as the one above, but having a square base and minimal surface area. Is this carton more efficient than the previous carton?

2. (4 points) Suppose a farmer has an apple orchard with 30 trees per acre. The orchard currently yields 12 bushels per tree. For each additional tree planted (per acre), the average yield per tree will be reduced by 0.1 bushels. Find the number of additional trees (per acre) that should be planted in order to maximize the number of apples (per acre) produced by this orchard. Also find the yield per acre after the new trees have been planted.