OPTIMIZATION

TEXT: 3.6

LAST NAME	FIRST NAME	DATE

1 (5 points)**.** A box with an open top is to be constructed from a square piece of cardboard 3 feet wide, by cutting out a square from each of the four corners and bending up the sides. Find the largest volume such a box can have.

2 (5 points)**.** Find the point on the line $y = 2x + 3$ that is closest to the origin.

3 (5 points). If two equal sides of an isosceles triangle each have length a, find the length of the remaining side that maximizes the area of the triangle.

4 (5 points). A rectangular poster is to have a total area of 180 square inches, with 2 inch margin on the top and 1 inch margins on the other three sides. Find poster dimensions that will yield the largest printed area (that is, the area within the margins).