ACE Calculus - Mr. Bo   Name_____

Unit 3B – Optimization   Date_____

What is Optimization?

What are the general steps for solving an optimization problem?

1. Draw & label a picture.

2. Write a primary equation that contains the variable to be optimized.

3. If necessary, use a secondary equation to rewrite the primary equation in terms of a single independent variable.

4.

5.

Examples:

1. A rectangular puppy pen is to be built using 25 feet of fencing. The pen will have one of its sides along a pre-existing fence. The pen will also be divided in half, perpendicular to the fence. What dimensions should be used to maximize the area of the pen?

2. During a baseball game, at the moment a batter hits the ball to center field, a runner on 3rd base begins his run towards home plate (with no lead off). The batter runs towards 1st base at 18 ft/sec and the base runner runs at 21 ft/sec. By the time the base runner reaches home plate, what was the closest the base runner and batter came to each other?

3. An open top box is going to be created from a single piece of 8.5 x 11 inch card board by cutting equal sized squares out of the corners and folding up the sides. What is the greatest volume box that can be obtained from this method?