

Math 118 Calculus I
Optimization Worksheet

- (1) A farmer has 200 yards of fence with which to construct three sides of a rectangular pen; an existing long, straight wall will form the fourth side. What dimensions will maximize the area of the pen?
- (2) At noon the Love Boat is 50 mi due north of the good ship Lollipop and is steaming south at 16 mi/h. The good ship Lollipop is headed west at 12 mi/h. At what time are they closest together, and what is the minimal distance between them?
- (3) The Leopard Automotive Co. estimates that they can sell 5000 cars a month at \$40,000 each, and that they can sell 500 more cars per month for each \$1000 decrease in price.
 - (a) What price per car will bring the largest gross income?
 - (b) If each car costs \$16,000 to make, what price will bring the largest total profit?