Name: _

Directions: Show all work. No credit for answers without work.

1. [2 points] After the price of a luxury car decreases by 4%, it costs \$28,499. Find the original price of the car.

- 2. [3 parts, 1 point each] A new chocolate company builds a manufacturing plant that costs \$1,500,000. Each chocolate bar that they produce costs \$1.75 and sells for \$7.50.
 - (a) Find formulas for the cost and revenue functions.
 - (b) Find the company's fixed costs and the company's marginal cost.
 - (c) How many chocolate bars must the company sell to make a profit?

3. [**0** points] Would you like to join a Math 122 study group? Please respond yes or no. By responding yes, you authorize me to include your name and USC email address in a message sent to your Math 122 study group. Each group will have at most 4 students chosen at random from the class.

4. [2 parts, 1 point each] Solve the following equations for $x \stackrel{\text{exactly}}{=}$. Decimal approximations are worth partial credit.

(a) $2 \cdot 7^x = 5$ (b) $5e^{3x+1} = 2^x$

- 5. [3 parts, 1 point each] You are negotiating your compensation for a 3 year consulting project. Your client is willing to accept two payment plans. Payment Plan A consists of a one-time payment of \$200,000 three years from now, when the project is complete. Payment Plan B calls for an immediate payment of \$50,000, a payment of \$60,000 halfway through the project, and a final payment of \$70,000 when the project is complete. Assume that invested funds earn interest at a rate of 4%, compounded annually.
 - (a) Find the future value of both plans in 3 years.

(b) Find the present value of both plans.

(c) Which plan represents the better deal?