

YOUR NAME: _____

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Read each problem **very carefully** before starting to solve it. Each problem is worth 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. A potter can produce china pitchers at a cost of \$10 each. She estimates that her price function is $p(x) = 30 - x$, where p is the price at which exactly x pitchers will be sold per week.
 - (a) Find the cost function $C(x)$.
 - (b) Find the revenue function $R(x)$.
 - (c) Find the profit function $P(x)$.
 - (d) Find the number of pitchers that should be produced to maximize profit.

2. A car rental business finds it can rent 60 cars if it charges \$80 for a weekend. It estimates that for each \$5 price increase it will rent three fewer cars. Let x be the number of \$5 price increases made.
- (a) Find an equation for the price $p(x)$.
 - (b) Find an equation for the number of cars $q(x)$ that will be rented.
 - (c) Find an equation for the revenue $R(x)$.
 - (d) What price should be charged to maximize the revenue and how many cars will be rented at this price?