

2. [14 points] Suppose p represents the price of a reuben sandwich at a certain restaurant on State St. $R(p)$ represents the number of reubens the restaurant will sell in a day if they charge $\$p$ per reuben.
- a. [3 points] What does $R(5.5)$ represent in the context of this situation?
- b. [3 points] Assuming R is invertible, what does $R^{-1}(305)$ represent?
- c. [3 points] The owner of the restaurant also has a Church St location. It doesn't get quite as much business, and the owner finds that the State St store sells 35% more reubens than the Church St store sells at the same price. Let $C(p)$ be the number of reubens the Church St location sells in a day at a price of $\$p$ each. Write a formula for $C(p)$ in terms of $R(p)$.
- d. [5 points] The owner starts doing research on reuben sales at the State St location; he wants to know how the number of reubens sold is related to the price. He finds that every time he raises the price by $\$1$ per reuben, the number sold in a day decreases by 20%. Let the constant B represent the number of reubens sold in a day at the State St store if the the price of reubens is $\$5$ each. Write a formula for $R(p)$ involving the constant B . Assume the domain of R is $1 \leq p \leq 25$.