

2. [12 points] A local grocery store sells dry goods in bulk, and one of the goods it sells is quinoa. It costs the store \$110.50 per month (for the space, employee time, etc.) to be able to stock and sell quinoa and \$1.25 per pound to purchase its supply of quinoa. The store charges customers \$4.50 per pound for quinoa.
- a. [3 points] Let $C(q)$ be the monthly cost, in dollars, for the store to stock and sell q pounds of quinoa per month. Find a formula for $C(q)$.

Answer: $C(q) =$ _____

- b. [2 points] Let $R(q)$ be the store's monthly revenue from quinoa, in dollars, if it sells q pounds of quinoa that month. Find a formula for $R(q)$. *Recall that revenue is the total amount of money that the store brings in, i.e. how much money customers pay.*

Answer: $R(q) =$ _____

- c. [4 points] Assume that the store sells all of the quinoa that it buys each month. How many pounds of quinoa must the store sell in a month in order to not lose money from selling quinoa? (That is, how many pounds of quinoa must the store sell in order to break even on quinoa?) *Remember to show your work.*

Answer: _____

- d. [3 points] The store also sells almonds. Suppose it sells, on average, a_0 pounds of almonds per month. Let $P(a)$ be the profit, in dollars, that the store earns each month from selling a pounds of almonds. Give a practical interpretation of the quantity $P(a_0 + 100) - P(a_0)$. (*Include units. Your interpretation should not include any math symbols or variables.*)