1.4 Applications of Functions to Economics

Example 1. A Baltimore charter school has overhead costs of $123,456 and each student costs the school an additional $11,729. The school gets revenue of $12,312 for each student.

(a) Find formulas for the school's cost function, the revenue function, and the profit function.

(b) Sketch a graph of $R(q)$ and $C(q)$ on the same axes. What is the break-even point, $q_0$, for the school?

(c) What is the marginal cost?
Example 2. Supply and demand of private K-12 schools in Baltimore are given by the following. The number of students who want to go to a private school is given by \( q = 20000 - 0.2p \). The number of students the schools want to admit is given by \( 1.45p \).

(a) At a price of $10000, what number of students want to go to private school? What number of students do the schools want to admit? Will the market push prices up or down?

(b) Find the equilibrium price and quantity. Does your answer to part (a) support the observation that market forces tend to push prices closer to the equilibrium price?