Examples

1. Suppose a line passes through the points $(2, 2)$ and $(4, 1)$. Write the equation of this line in standard, slope-intercept, and point-slope forms.

2. Consider the line in the previous example. Is it parallel or perpendicular to the line $y = 2x$.

3. Consider the line in the previous example. Is it parallel or perpendicular to the line $y = 2x - 3$.

4. Consider the line in the previous example. Is it parallel or perpendicular to the line $y = -3x + 2$.

Application: Supply and Demand

Suppose the supply and demand functions for Alpha axles is:

$$\text{Supply}: \quad p = S(q) = \frac{1}{2}q + 1.$$
$$\text{Demand}: \quad p = D(q) = -q + 10.$$

What is the supply and demand price for 6 units?

Application: Supply and Demand

Example

Suppose that the demand and price for Bravo beverage are related by the equation $p = D(q) = 8 - \frac{5}{4}q$ and suppose the price and supply of this beverage are related by $p = S(q) = \frac{3}{4}q$.

- Find the supply price and demand price at 2 units and at 8 units.
- Find the equilibrium quantity and price.

Application: Supply and Demand

Example

Suppose the supply and demand functions for Charile's chocolates are

$$p = S(q) = \frac{3}{2}q$$
$$p = D(q) = 81 - \frac{3}{4}q$$

Find the equilibrium quantity and the equilibrium price.

Example

The marginal cost to make x Delta diodes is \$15 per batch, and the cost to make 1,000 batches is \$25,000.

Find the cost function $C(x)$, given that it is linear.

Example

Each Delta diode batch is sold for \$40 in North America.

What is the profit for Delta diodes?

What is the break-even quantity?

What is the break-even point?