

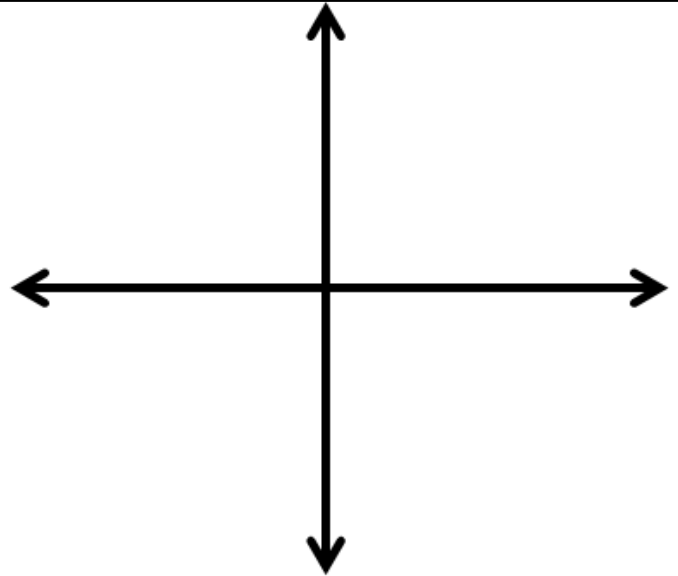
Each graph needs the x-intercepts, y-intercept, vertex, and axis of symmetry. Find each then scale your graph.

1. The path of a diver is given by

$$y = -\frac{4}{9}x^2 + \frac{24}{9}x + 12$$

Where y is the height (in feet) and x is the horizontal distance from the end of the diving board.

- Sketch the graph of the diver's path.
- What is the maximum height of the diver?
- How far horizontally has the diver gone at the max height?
- How far from the diving board does the diver hit the water?

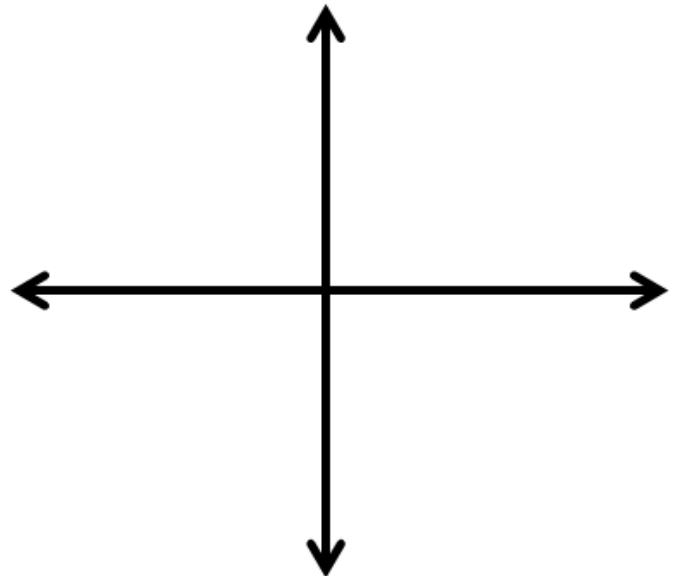


2. The height of a punted football is given by

$$y = -\frac{16}{2025}x^2 + \frac{9}{5}x + 1.5$$

Where x is the horizontal distance in feet from the point at which the ball is punted.

- How high is the ball when it is punted?
- What is the maximum height of the punt?
- How long is the punt?

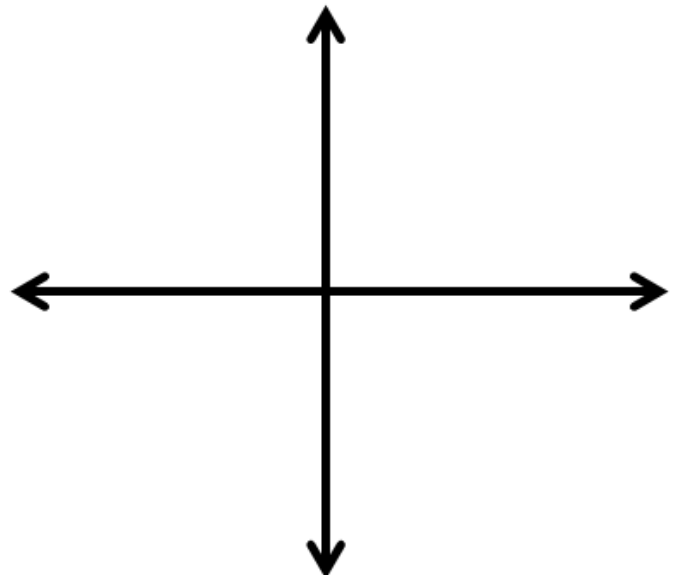


3. A manufacturer of lighting fixtures has daily production costs of

$$c = 800 - 10x + .25x^2$$

Where C is the total cost in dollars and x is the number of units produced.

- Sketch a graph.
- How many fixtures should be produced each day to yield a minimum cost?
- What is the minimum cost per unit?



4. The profit P (in hundreds of dollars) that a company makes depends on the amount x the company spends on advertising according to the model

$$P = 230 + 20x - 0.5x^2$$

Where C is the total cost in dollars and x is the number of units produced.

- A. Sketch a graph.
- B. What expenditure for advertising will yield a maximum profit?

5. The total revenue R earned (in thousands of dollars) from manufacturing handheld video games is given by

$$R(p) = -25p^2 + 1200p$$

Where p is the price per unit (in dollars).

- A. Sketch the graph.
- B. Find the revenues when the price per unit is \$20, \$25, and \$30.
- C. Find the unit price that will yield a maximum revenue. What is the maximum revenue? Explain your results.

6. The total revenue R earned per day (in dollars) from a pet-sitting service is given by

$$R(p) = -12p^2 + 150p$$

Where p is the price charged per pet (in dollars).

- A. Sketch the graph.
- B. Find the revenues when the price per pet is \$4, \$6, and \$8.
- C. Find the price that will yield a maximum revenue. What is the maximum revenue? Explain your results.

