

1. Given the standard form of the quadratic function, $y = -\frac{1}{2}x^2 + 4x - 3$:

- a) Will the graph be **wider** or **narrower** than the original $y = x^2$?
- b) What is the **direction of opening**?
- c) What are the coordinates of the **vertex**?
- d) How many **x-intercepts** will the graph have?

2. Given the quadratic function $y = \frac{1}{2}(x + 7)(x - 3)$, determine the

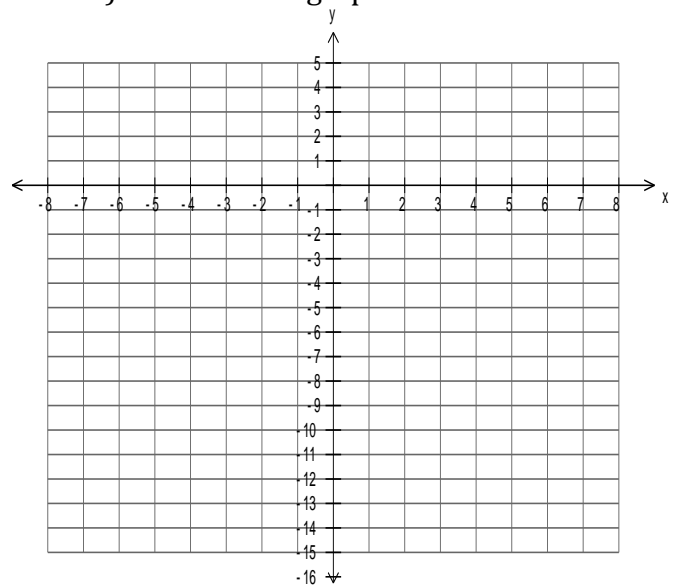
e) sketch the graph

a) x - intercepts:

b) coordinates of the vertex:

c) y - intercept:

d) range:



3. A model rocket is launched from its launch pad which is 15 m above the ground. It takes 2 seconds for the rocket to reach a maximum height of 35 m.

a) Algebraically determine the quadratic function in the form $y = a(x - h)^2 + k$, that models the path followed by the rocket.

b) Determine the height of the rocket at 3.5 s.

4. Larry operates a popular hot dog stand. He sells 550 hot dogs per day at \$2 each. The previous year's sales show that for every \$0.50 increase in price, he will sell 50 fewer hot dogs.

a) Write a quadratic equation that models this problem.

b) What price should Larry charge to maximize his revenue?

c) What is the maximum revenue?

5. A ball is thrown into the air and its height $h(t)$ above the ground, in meters, after t seconds is modeled by the function $h(t) = -5t^2 + 20t + 2$.

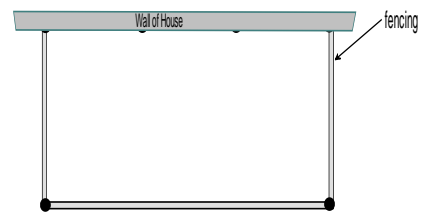
a) What is the initial height of the ball?

b) When did the ball reach its maximum height?

c) What was the maximum height of the ball?

6. A rectangular region is to be constructed using 120m of fencing and a house as one side.

a) Write the quadratic function that models the area of the rectangular region.



b) Determine the width which maximizes the area.

c) Determine the maximum enclosed area.

7. Given the function $y = 2(x-3)^2 - 8$, determine the following information and sketch the graph.

a) equation of the axis of symmetry:

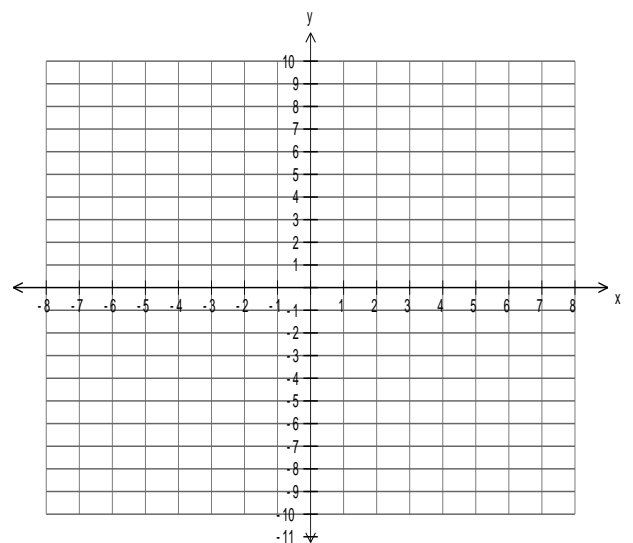
b) coordinates of vertex:

c) y-intercept:

d) domain:

e) range:

f) sketch:



g) What is the function in standard form?