

I. Writing Quadratic Functions in Vertex Form

State the quadratic function in vertex form and identify the vertex.

1. $f(x) = x^2 + 24x + 145$

2. $g(x) = 3x^2 - 18x + 7$

3. $h(x) = 2x^2 + 14x - 3$

II. Choose a function above to graph and state the information requested.

Function: _____

Transformations:

Domain:

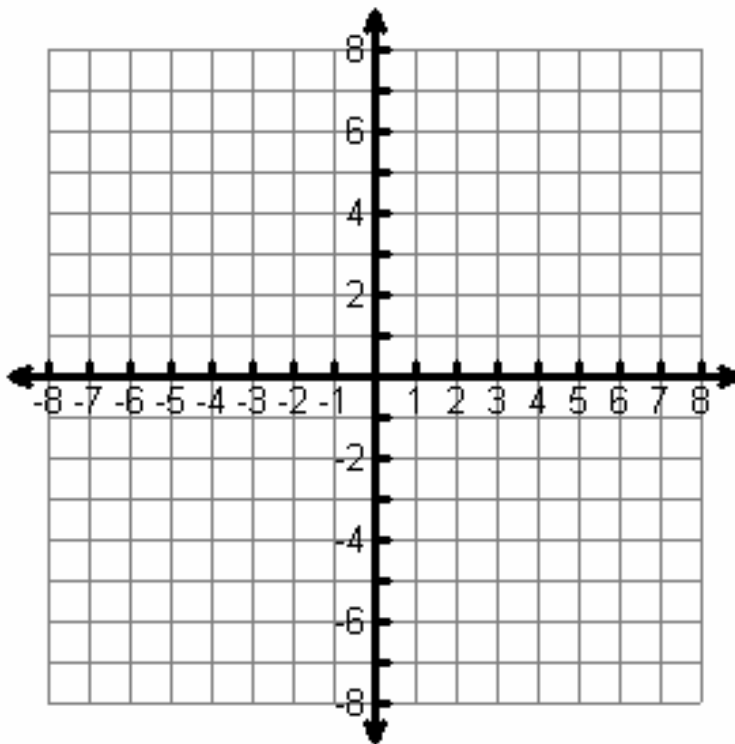
Range:

x-int:

y-int:

Vertex:

Axis of Symmetry:



2. A sheet of metal is to be cut into a rectangular shape so that the width of the sheet metal is 6 ft less than the length.

a) Sketch a picture of the sheet metal and label its dimensions

b) Write an equation for the area of the sheet metal as a function of the length.

c) If the maximum area of the sheet is to be 216 sq ft, what are the dimensions of the sheet?

(Show work)

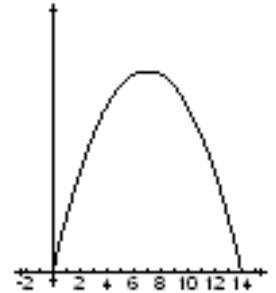
3) A rocket is launched from ground level with an initial velocity of 224 ft/s.

The equation for this problem is $h = -16t^2 + 224t$ and the graph is sketched to the right.

a) When does the rocket hit the ground? _____

b) What is the maximum height of the rocket?

(Find this algebraically – SHOW YOUR WORK)



4. A rectangular pool 60 ft long by 40 ft wide is surrounded by a walk of uniform width. The area of the walk is found using the equation: $A = (2x + 40)(2x + 60) - 2400$ where “x” represents the width of the walk.

a) If the total area of the walk is 416 square feet, what is the width of the walk? _____

(Hint: you may use your calculator here.)

b) Explain in complete sentences how you got your answer to part a.

V. Quadratic Regression

1. The following data was collected for the braking distance of an automobile at various speeds under normal driving conditions.

Speed (m/hr)	10	16	22	29	33	40	55	70
Distance	19	30	41	66	83	116	215	343

a. Find the quadratic regression of best fit. _____

b. Predict the braking distance for a vehicle going 48 miles per hour. _____

c. If the distance traveled is 450 feet from the time the brakes are applied, then what was the speed of the car at the time the brakes were applied? _____