

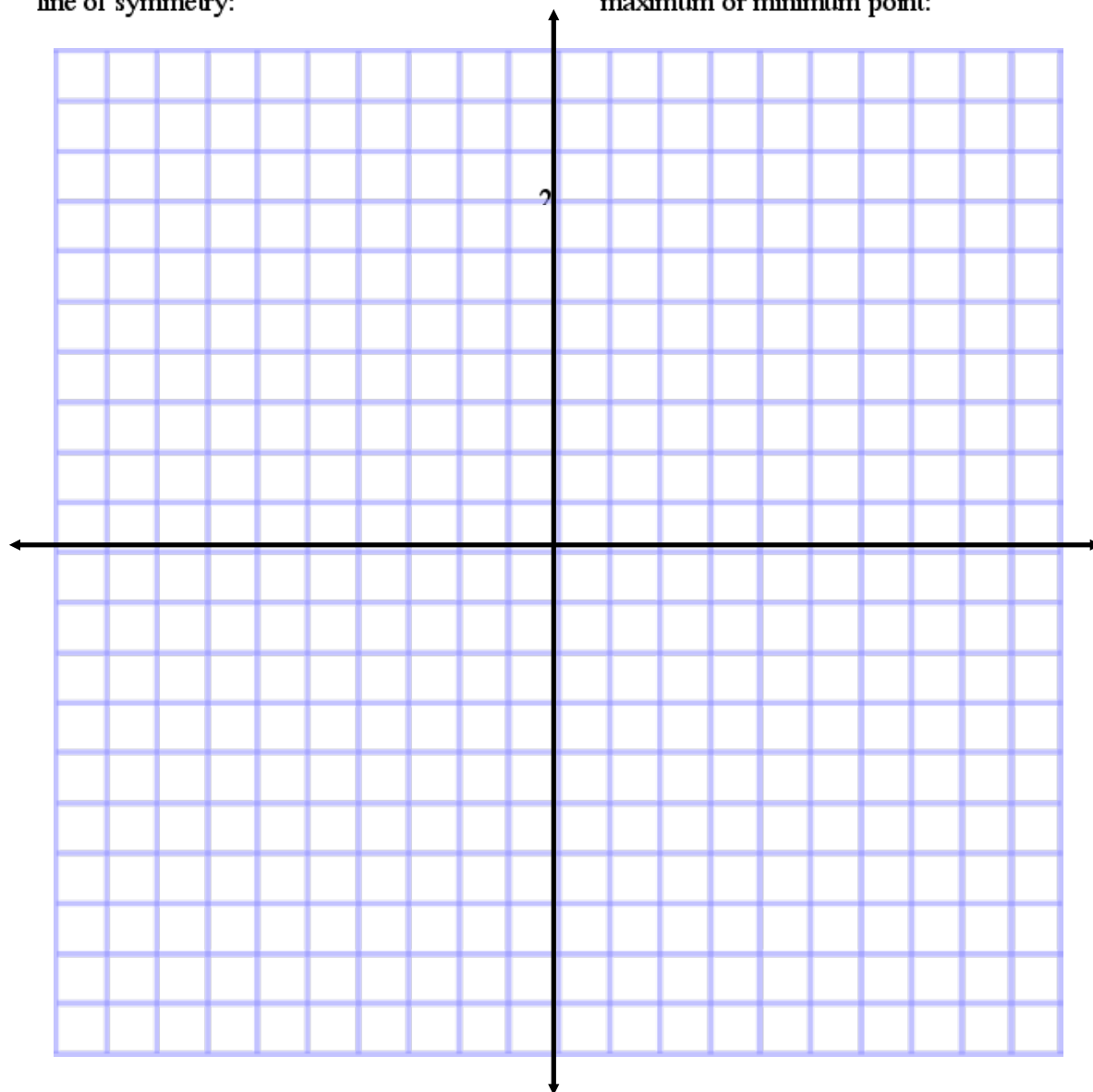
Find the x and y intercepts, maximum or minimum, and the line of symmetry of the graph of $A = (x+1)(x+3)$ and explain how you found each. Write each point as an ordered pair.

x -intercepts:

y -intercept:

line of symmetry:

maximum or minimum point:



1. Find the key feature the graph of $y = (4x - 2)(x + 4)$. Show or explain how each is found. (worth 40 points)

y-intercept:

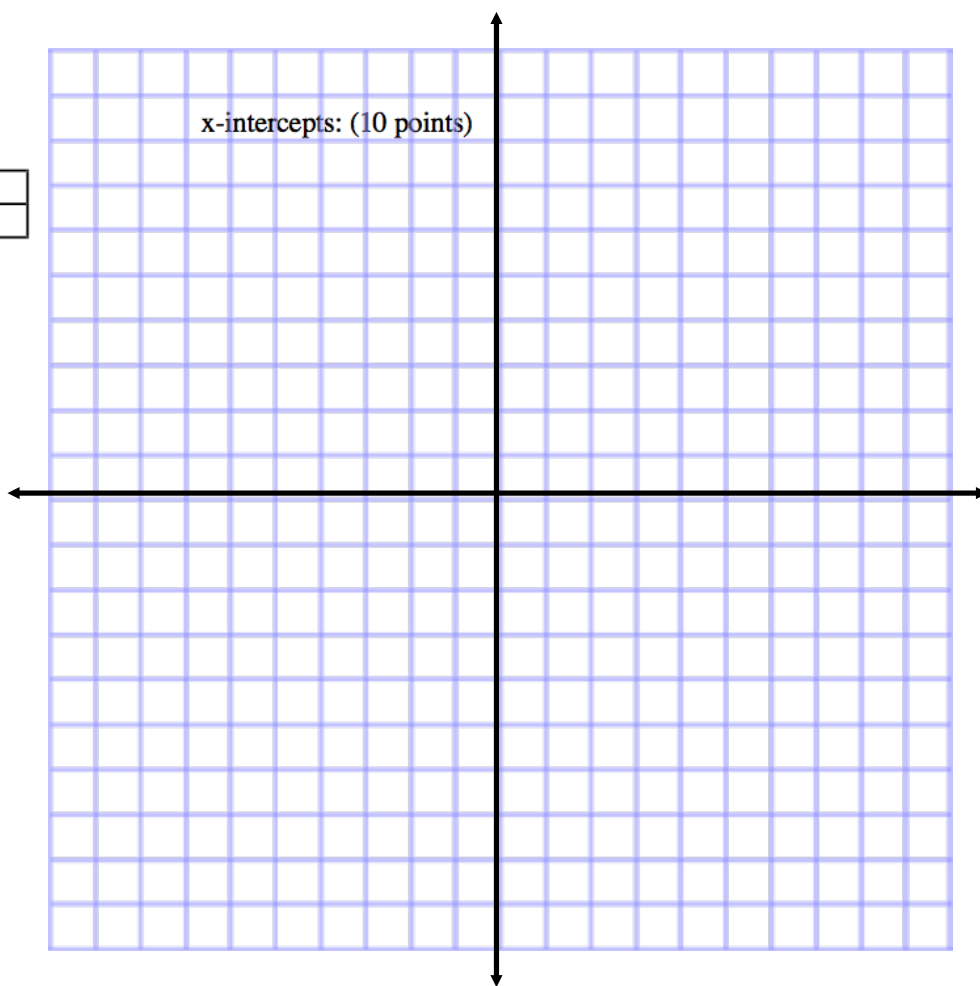
line of symmetry:

vertex: (10 points)

2 random points:

x		
y		

x-intercepts: (10 points)



Circle the two equations below that you are sure are quadratic and have a minimum point. Explain what you looked for in the equations.

$$y_1 = 35x^2 + 6x + 18$$

$$y_2 = -133x^2 + 23x - 2$$

$$y_3 = 126 - 432x$$

$$y_4 = (4x + 2)(9 - 76x)$$

$$y_5 = 25(1.8)^x$$

$$y_6 = (25x + 2)(9 + 16x)$$

Write the expression in factored form.

a.) $3x^2 + 7x + 2$

b.) $y^2 + 4y$

c.) $2a^2 + 5a + 3$

d.) $3c^2 + 2c - 1$

e.) $9d^2 - 100$

f.) $6g^2 - 19g - 7$

Which of these six expressions represent a quadratic relationship? Circle your choice(s). Explain how you know.

$2x(3) - 15(x + 2)$

$x^2 + 5$

$x(79x + 4)$

$x + x + 65$

2^x

$18x^2 + 5x$

Draw a rectangle divided to show that its area is represented by the expression $(2x + 5)(x + 4)$. Label the lengths and areas on your drawing.

1. A signal flare is fired into the air from a boat. The height h of the flare in feet after t seconds is

$$h = -16t^2 + 64t$$

a. How high will the flare travel? When will it reach this maximum height? (10 points)

b. When will the flare hit the water? Explain how you know. (10 points)

c. Explain how you could use a table and a graph to answer the questions in parts (a) and (b).

For this problem, use the equation $y = 3x^2 + 2x - 1$.

a. Copy and complete this table:

x	0	1	2	3	4
y					

b. What are the first differences in your table for the y values as x increases by 1?

c. What are the second differences in your table for the y values as x increases by 1?

d. Describe any patterns in the values you found in part (c) for the second differences.

One of the equations below represents the height, h , in feet of a thrown baseball as it changes over time, t , in seconds. The ball starts about shoulder height, rises to a maximum, and then falls to the ground.

$$h = 16t^2 + 40t + 4 \qquad h = -16t^2 + 40t + 4 \qquad h = 16t \qquad h = 16t^2 + 4$$

- a. Which of these equations is a reasonable model for the given situation? Explain your choice.
- b. How is “shoulder height” represented in the correct equation?
- c. What maximum height will the ball reach? Explain how you found your solution.

A signal flare is fired into the air from a boat. The height h of the flare in feet after t seconds is $h = -16t^2 + 160t$.

- a.** How high will the flare travel? When will it reach this maximum height?
- b.** When will the flare hit the water?

Which table could represent a quadratic relationship?

F.

x	y
-3	-3
-2	-2
-1	-1
0	0
1	1
2	2
3	3

G.

x	y
-3	1
-2	2
-1	3
0	4
1	3
2	2
3	1

H.

x	y
1	0
2	2
3	6
4	12
5	20
6	30
7	42

J.

x	y
-1	10
0	7
1	4
2	1
3	4
4	7
5	10

This prism is made from centimeter cubes. After the prism was built, its faces were painted.



How many centimeter cubes have

- | | |
|-------------------------------------------------------|--------------------------------|
| a. no painted faces? | b. one painted face? |
| c. two painted faces? | d. three painted faces? |
| e. How many centimeter cubes are there in all? | |