12.2 Solve Quadratics by Graphing

NOTES

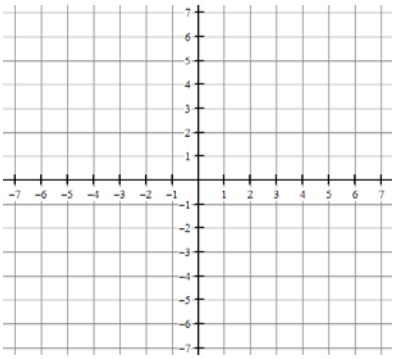
ALGEBRA

Write your questions here!

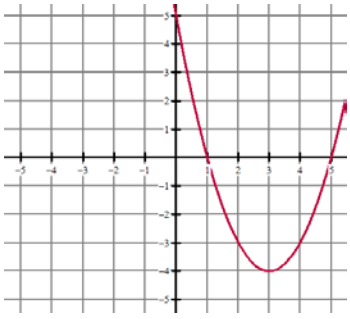
This section requires GRAPHING CALCULATOR!

SOLVE

$$0 =$$

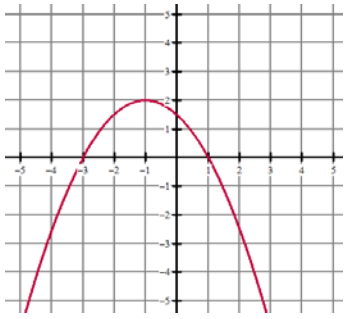


Roots =



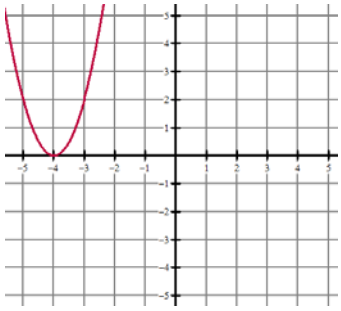
Roots =

Vertex =



***x*-intercepts =**

Max/Min =



zero(s) =

Vertex =

Solve by graphing!

$0 = 2x^2 - 3x - 7$

$2x^2 = x - 5$

Find the max/min by graphing! Sketch a graph.

$0 = 2x^2 + 3x - 5$

$0 = 0.6x^2 + 7.5x + 8$

Cliff diver Kelly stands on a 70 foot cliff. He jumps with an initial velocity of 8 ft/sec.

$$s(t) = -16t^2 + vt + h$$

$s(t)$ = height of object

v = initial velocity

h = initial height

Graph in the calculator with a "friendly window".

*x*min = *y*min =

*x*max = *y*max =

*x*scl = *y*scl =

When will Mr. Kelly hit the water?

What is Mr. Kelly's maximum height?

SUMMARY:

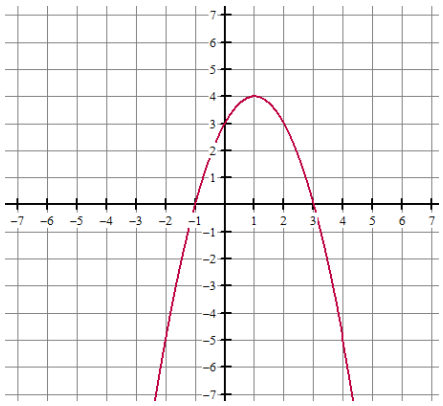
Now, summarize your notes here!

12.2 Solve Quadratics by Graphing

PRACTICE

Find the coordinates of the zeros and vertex using the graph of the function.

1.

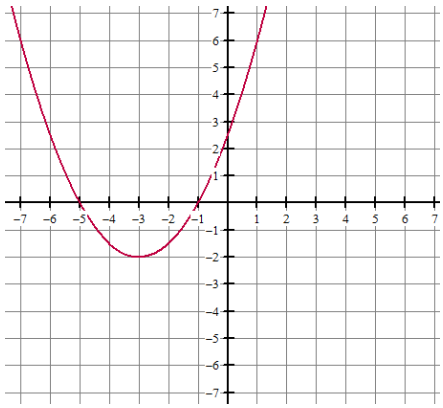


Zeros:

Vertex:

Is the vertex a maximum or minimum?

2.

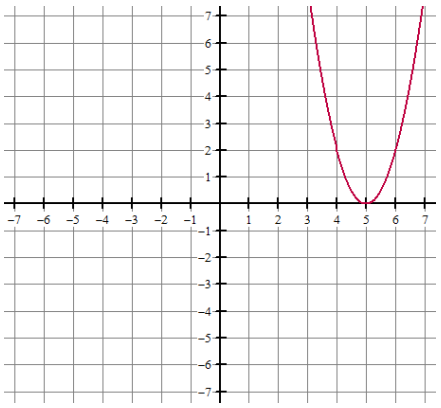


Zeros:

Vertex:

Is the vertex a maximum or minimum?

3.



Zeros:

Vertex:

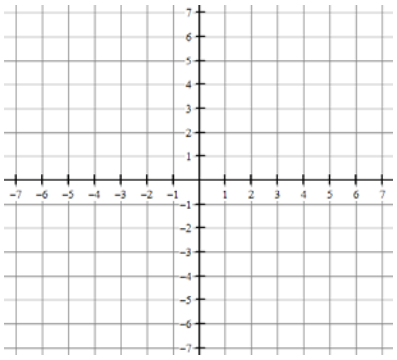
Is the vertex a maximum or minimum?

Find the roots and vertex of the function by graphing. Sketch a rough graph. Round to the nearest hundredth.

4. $f(x) = -x^2 - 3x + 4$

Roots:

Vertex:

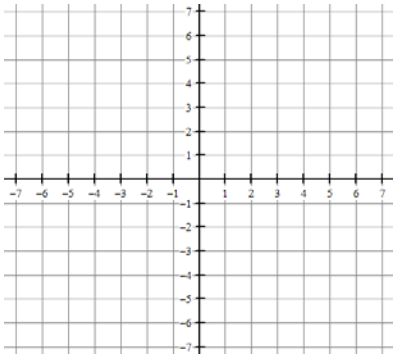


Is the vertex a maximum or minimum?

5. $f(x) = \frac{1}{2}x^2 + 4x + 5$

Roots:

Vertex:

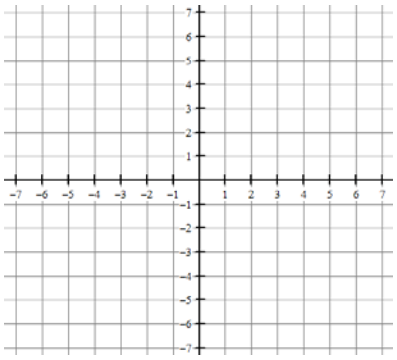


Is the vertex a maximum or minimum?

6. $f(x) = -2x^2 + 11x - 8$

Roots:

Vertex:

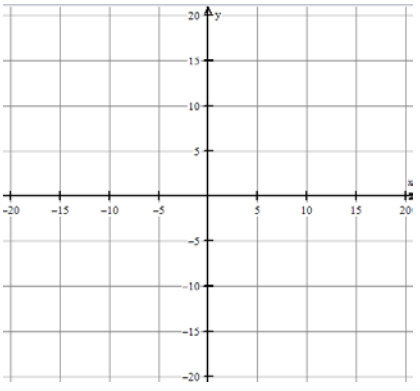


Is the vertex a maximum or minimum?

7. $f(x) = 0.2x^2 + 3x - 5$

Roots:

Vertex:



Is the vertex a maximum or minimum?

Solve the equation by graphing. Round to the nearest hundredth.

8. $2x^2 + x - 3 = 0$

9. $-4x^2 - 4x + 1 = 0$

10. $3x^2 + 1 = 2x$

11. $\frac{1}{2}x^2 = 3 + 2x$

Graph to answer the following. Round to the nearest hundredth.

12. Find the zeros of

$$f(x) = -\frac{1}{2}x^2 - 6x - 5$$

13. What is the maximum point for

$$y = -x^2 + 22$$

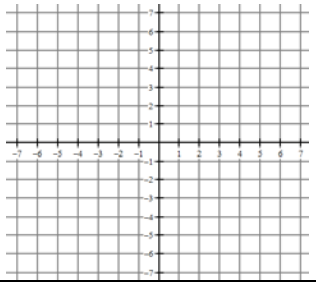
14. Explain why there is no solution to the following:

$$f(x) = 0.6x^2 - 2x + 5$$

SKILLZ REVIEW

GRAPH

1. $2x + y = -3$



FACTOR

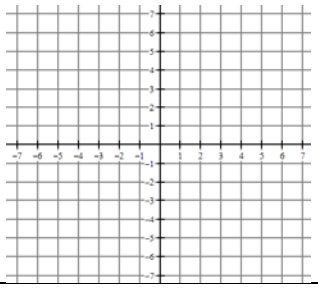
2. $x^2 + 2x - 80$

RADICALS

3. Simplify

$$\sqrt{75}$$

4. $x - 2y = 10$



5. $2x^2 - 5x - 3$

6. Simplify

$$\frac{2}{\sqrt{2}}$$

12.2 Solve Quadratics by Graphing

APPLICATION

1. Solve using the graphing calculator.
(Round to nearest hundredth).
$0 = -3x^2 + 4x + 5$

2. What is the minimum point of $(x) = 6x^2 + 2x - 3$?

TRANSLATIONS!

Translating a graph means sliding it around. Figure out how to move a parabola up/down/left/right using the calculator. Think Golden Arches where the left parabola slides over to make the right parabola.

3. The most basic quadratic is $y = x^2$.
Graph $y = x^2$ on calculator with a standard window (ZOOM 6).
Use this graph to compare to #4-10 below.

4. Move your $y = x^2$ graph up 3 places. Write the equation that does this.

5. Move your $y = x^2$ graph down 5 places. Write the equation that does this.

6. Flip your $y = x^2$ graph upside down. Write the equation that does this.

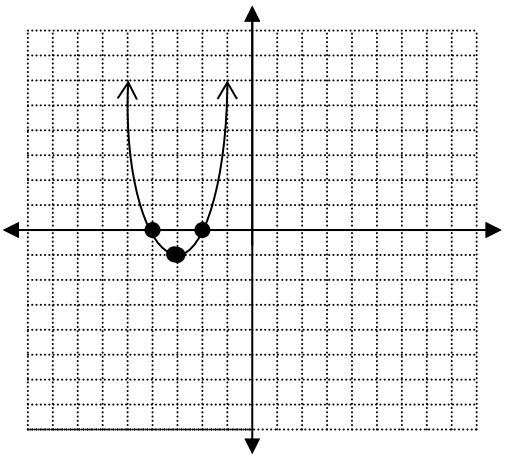
7. Graph $y = (x - 3)^2$. Describe its translation (how it moved) from the original graph of $y = x^2$.

8. Move your $y = x^2$ graph left 5 places. Write the equation that does this.

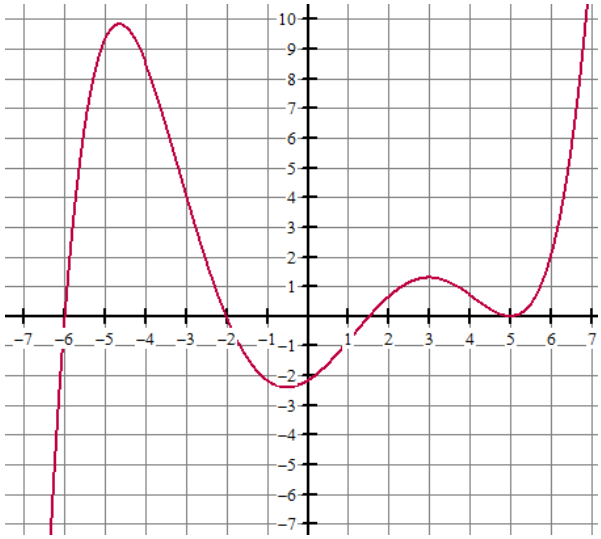
9. Move your $y = x^2$ graph right 2 places and up 4 places.
Write the equation that does this.

10. Flip your $y = x^2$ graph upside down and move 1 left and 6 down.
Write the equation that does this.

11. Write the equation of the following graph. →



12. Use the graph to approximate the following:



Roots:

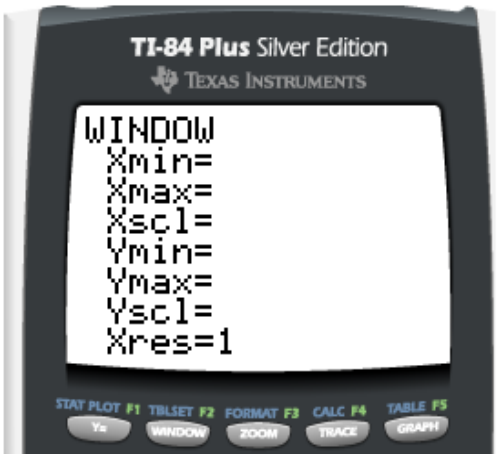
Maximum(s):

Minimum(s):

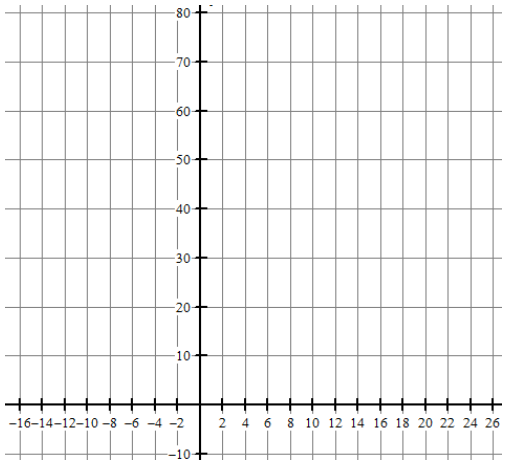
y-intercept:

$f(-4) =$

13. Write the window that displays the graph to the right.

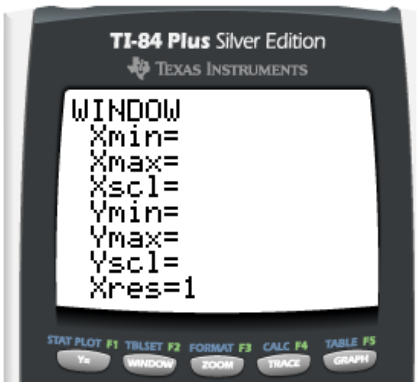


=



14. Mr. Kelly enters a 24 hour Magic "The Gathering" card tournament. The function shows Mr. Kelly's total cards during the 24 hour tournament. $y = -\frac{1}{4}x^2 + 4x + 32$ where *x* is hours since the start of the tournament and *y* is total cards.

a. Graph with a "friendly" window. Record window here. →



b. What is the maximum amount of cards Mr. Kelly with have?

c. How many cards will Mr. Kelly have at 5 hours?

d. When will Mr. Kelly run out of cards?