Solving by Graphing

agenda

Warm-Up

HW Check

Notes (Flip Book)

HW: Practice #1-12

Reminders

Quiz Friday

HW 5.5 Due Friday

Algebra I Simulation TUESDAY

Warm--Up ThUrSday

Have out your graphing calculator.

1. Write two other names for the x-intercepts of a quadratic equation.

Roots, zeroes, solutions

2. Find the equation for the axis of symmetry in the quadratic formula.

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$X = \frac{-b}{2a}$

Questions comments concerns

Algebra I – Unit 9: Topic 3 – Solving Quadratics Using the Quadratic Formula

Practice - Solving Quadratics Using the Quadratic Formula **pp 652-659**

Name _____ Date _____ Period _____

Find the number of solutions for each equation using the discriminant. Show your work or draw the corresponding picture.

1. $2x^2 - x = 21$

2. $5x^2 + 12x + 8 = 0$

3. $x^2 + 25 = 10x$

4. $4 = -16x^2 + 12x$

Solve the equations below using the Quadratic Formula. Round solutions to the nearest hundredth, if necessary.

5. $4x^2 + 7x = 15$

6. $10x^2 - 3x - 1 = 0$

$a=10 \quad b=-3 \quad c=-1$

$b^2-4ac \Rightarrow (-3)^2-4(10)(-1)$

$=49$

$x=\frac{-(-3)\pm\sqrt{49}}{2(10)}$

$\left\{\frac{1}{2}, \frac{-1}{5}\right\}$

Algebra I – Unit 9: Topic 3 – Solving Quadratics Using the Quadratic Formula

Solve the equations below using the Quadratic Formula. Round solutions to the nearest hundredth, if necessary.

7. $-z^2 + z = -14$

8. $8h^2 + 8 = 6 - 9h$

BONUS :)

9. A rectangle with an area of 91 square meters has dimension of $(x+2)$ meters and $(2x+3)$. Solve for the dimensions of the rectangle. Round to the nearest tenth of

10. For the period 1990-2000, the amount of money, y (in billions of dollars) spent on advertising in the U.S. can be modeled by the function $y = 0.93x^2 + 2.2x + 130$, where x is the number of years since 1990. In what year was 164 billion dollars spent on advertising?

$164 = 0.93x^2 + 2.2x + 130$

$-164 \qquad -164$

$0 = 0.93x^2 + 2.2x - 34$

$a = .93 \quad b = 2.2 \quad c = -34$

$b^2 - 4ac \Rightarrow (2.2)^2 - 4(.93)(-34) = 131.32$

$x = \dfrac{-2.2 \pm \sqrt{131.32}}{2(.93)} = 5$

1995

Algebra Simulation

Tuesday

2nd and 3rd period

Most of us will go to the freshmen gym at 8:55AM with your calculator and pencil. We will let you know if you are not in the gym. You will take your test until 12:30, then you will go to B-lunch. You will go to 5th-7th period as normal.

4th and 5th period

You will go to your 1st-3rd period as normal. YOU EAT A-LUNCH!!

Most of us will go to the freshmen gym at 12:30PM with your calculator and pencil. We will let you know if you are not in the gym. You will take your test until 4:10PM.

If you are not taking the English I STAAR or have taken Algebra I previously, please see Ms. K.

Solving by Graphing

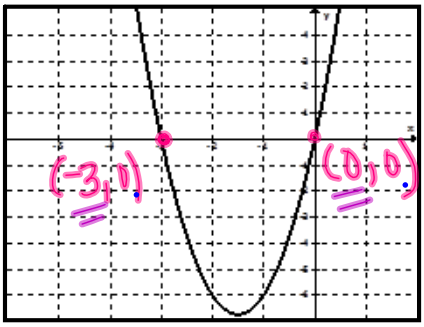
The roots, zeroes, or x-intercepts are also called the _____ of the equation.

solutions

1. Find the zeroes of the graph below.

x-intercepts

{-3, 0}



2. Sketch the graph of $-x^2 + 4x = 4$

CALCULATOR

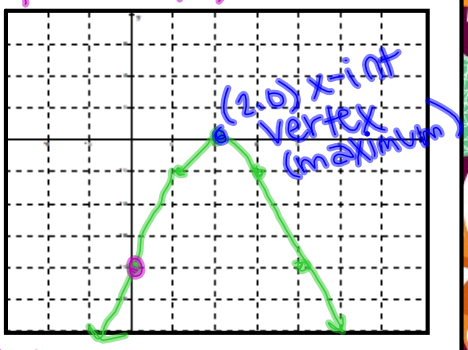
-4 -4

$-x^2+4x-4=0$

What are the x & y intercept(s)?

x-int: (2, 0)

y-int: (0, -4)



TWO

3. Complete the table that includes the solution(s) of the quadratic equation.

$x^2 - 6x = 0$

2nd GRAPH

when y = 0

x	-1	0	1	2	5
y	7	0	-5	-8	-5

4 D

Quadratics can have TWO, ONE, or NO solutions.

Solve the following equations using your calculator.

4. $f(x) = 5x^2 + 29x + 20$

y

{-.8, -5}

5. $-x^2 - 5 = -4x$

+4x +4x

NO SOLUTIONS

$-x^2+4x-5=0$

6. $x^2 = +4$

-4 -4

$x^2-4=0$

{-2, 2}

Calculator Steps

(get everything on one side)

1. Solve for y or for zero. Enter that equation into y =
2. Plug in $y_2 = 0$
3. Graph
4. Press 2nd TRACE 5: Intersect

enter x3

5. Find BOTH intersections

OR look at table and find y = 0 (doesn't work for decimals)

Algebra I – Unit 9: Topic 3 – Solving Quadratics by Graphing

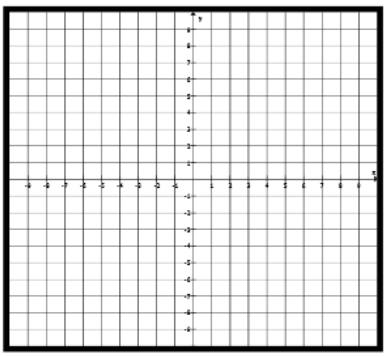
Practice - Solving Quadratics by Graphing **pp 622-624**

Name _____ Date _____ Period _____

Complete the table including the solution(s) of the quadratic. Then graph the quadratic equation.

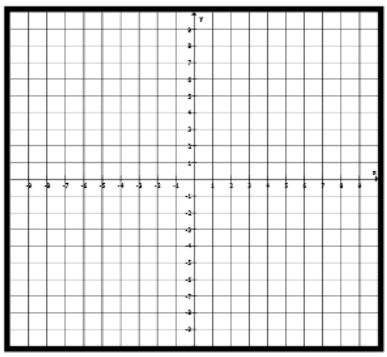
1. $x^2 + 7x + 10 = 0$

x					
y					

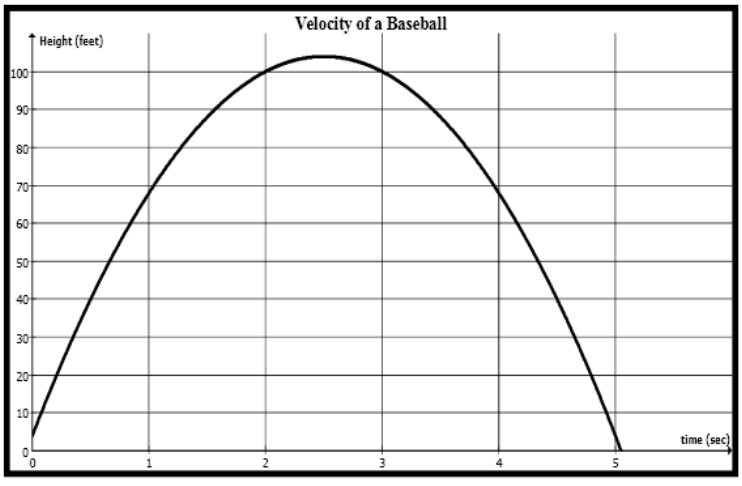


2. $x^2 + 5x = -6$

x					
y					



3. A baseball coach uses a pitching machine to simulate pop flies during practice. The baseball is shot out of the pitching machine with a velocity of 80 feet per second. The quadratic function $y = -16x^2 + 80x + 4$, shown below, models the height of the baseball after x seconds.



A. Approximately, how long does the baseball stay in the air?

B. What is the maximum height that the baseball reaches?

Algebra I – Unit 9: Topic 3 – Solving Quadratics by Graphing

Complete the information requested for each quadratic equation.

4. $x^2 + 5x = 6$

Solution(s): _____

Max/Min: _____

5. $x^2 - 18 = 7x$

Root(s): _____

Max/Min: _____

6. $5x^2 + 25x = 0$

x-intercepts(s): _____

Max/Min: _____

(verify) Blue Book

7. $-x^2 - 10x = 25$

Root(s): _____

Vertex: _____

8. $x^2 + 3 = 0$

x-intercepts(s): _____

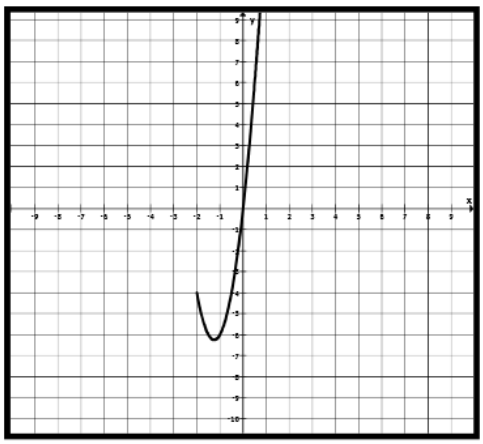
Vertex: _____

9. $9x = -x^2 - 18$

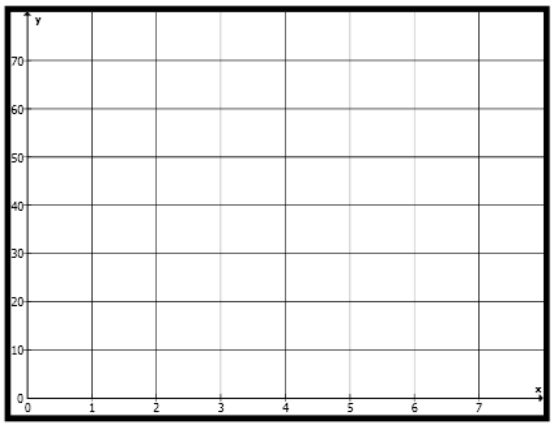
Zeros: _____

Vertex: _____

10. Part of the graph of a quadratic equation is shown below. If the line of symmetry for this quadratic equation is $x = -1.25$, between which two integers will the other part of the graph intersect the x-axis?



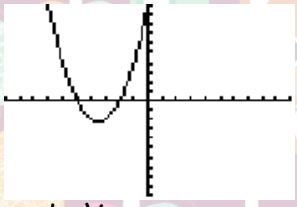
11. If a goalie kicks a soccer ball with an upward velocity of 65 feet per second and his foot meets the ball 3 feet off the ground, the function $y = -16t^2 + 65t + 3$ represents the height of the ball y in feet after t seconds. Graph the function on the grid below.

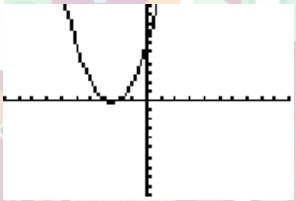


12. Approximately how long is the ball in the air?

Hw Help: Graphing

#1&2, use your calculator! Make sure you have BOTH points where y = 0. Use at least 3 points to make your graph!

1. 

2. 

#3. Use the graph. You may approximate values.

#4-9, solve each equation for 0 (move everything to one side) and then use your calculator to find the requested information. Remember: x-intercepts = zeros = roots = solutions. Look at your blue quadratics book from the beginning of the unit to find the vertex (max/min) of each graph. Make sure you check if it is a minimum or a maximum!

#10. Using the axis of symmetry (a VERTICAL line), find the spot on the x-axis that will be the same distance away to find the second root!

#11. Use the table on your calculator to find points to plot.

QUIZ TOMORROW!!!