Quadratic Formula

Agenda

Warm-Up

HW Check & Turn-in

Notes (Flip Book)

HW: Practice EVENS - wheel spun on TUESDAY

Reminders

English EOC (9th - Mon, 10th - Tues)

GOOD LUCK!!

Algebra Simulation Wednesday 4/2

Warm-Up (Friday)

1. Write the following quadratic equation in standard form.

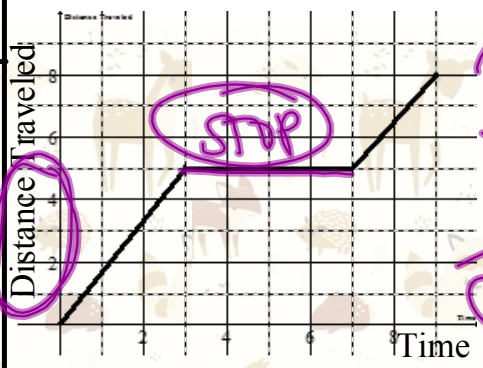
$y - 6 + 3x = 5x^2$

$y = 5x^2 - 3x + 6$

$y + 6 + 3x = 5x^2 + 6$

$-3x \quad -3x$

2. Which situation best describes the following graph?



A. An airplane descends at a constant rate, levels off for a few minutes, and then continues to descend.

B. A man walks up a hill, walks along a flat road, and walks up another hill.

C. A ball is dropped from the top of a 3-story building.

D. A car traveling at a constant speed for a few minutes, stops at a red light, and then continues on at a constant rate.

Homework Check

Answers:

1. $x:\left\{\frac{2}{3},\frac{3}{4}\right\}$
2. $x:\left\{\frac{3}{2}\right\}$
3. $x:\{4\}$
4. $x:\left\{\frac{1}{4},-\frac{1}{3}\right\}$
5. $x:\{3,-5\}$
6. $x:\{-2,-1\}$
7. $x^2-4x-21=0$
8. $5x^2-18x-8=0$
9. $x:\left\{-\frac{1}{3},4\right\}$
10. C
11. $w=21$ meters
12. 1 second
13. $w=7$ cm; $l=10$ cm

5 questions

$(x+3)(x-7)=0$

$(5x+2)(x-4)=0$

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

Practice - Solving Quadratics by Factoring **pp 630-635**

Name _____ **Date** _____ **Period** _____

Solve the equations below by factoring.

1. $(3x-2)(4x-3)=0$

2. $4x^2-6x+9=6x$

3. $x^2=8x-16$

4. $12x^2-1=-x$

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

6. $2x^2=-4-6x$

Given the roots find the quadratic equation.

7. $x:\{-3,7\}$

8. $x:\left\{-\frac{2}{5},4\right\}$

$5\cdot x=-2\cdot 5$

$5x=-2$

$+2 \quad +2$

$(5x+2)=0$

$x=4$

$-4 \quad -4$

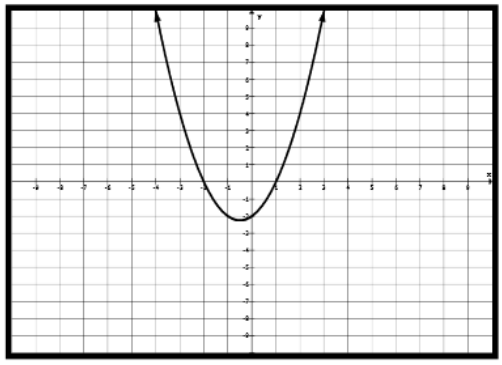
$(x-4)=0$

$(5x+2)(x-4)=0$

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

9. Which equation best represents the graph shown?

A $(x-2)(x+1)=y$
B $(x+2)(x+1)=y$
C $(x+2)(x-1)=y$
D $(x-2)(x-1)=y$



11. The area of a rectangular floor is described by the equation $w(w-9)=252$ where w is the width of the floor in meters. What is the width of the floor?

$w(w-9)=252$
$w^2-9w=252$
$-252\quad -252$
$w^2-9w-252=0$

$w \quad +12$
$w \mid w^2 \mid 12w$
$-21 \mid -21w \mid -252$

$-252w^2$
$-21w \quad 12w \quad -9w$

-252
$-21 \mid 12$

$(w+12)(w-21)=0$
$w=-12 \quad w=21$

21 m

12. A group of friends try to keep a beanbag from touching the ground without using their hands. Once the beanbag has been kicked, its height can be modeled by $h=-16t^2+14t+2$, where h is the height in feet above the ground and t is the time in seconds. Find the time it takes the beanbag to reach the ground.

13. The length of a rectangle is 3 cm more than the width. The area is 70 square centimeters. Find the dimensions of the rectangle.

$l=3+w$
$A=lw$

$70=(3+w)w$
$70=3w+w^2$
$0=w^2+3w-70$

$w+10$
$w \mid w^2 \mid 10w$
$-7 \mid -7w \mid -70$

$-70w^2$
$-7w \quad 10w$
$3w$

-70
$-7 \mid 10$

$(w+10)(w-7)=0$
$w+10=0 \quad w-7=0$
$w=-10 \quad w=7$

width = 7cm
length = 10cm

Quadratic Formula

Quadratic Formula: finds x-intercepts IF equation is in standard form $y=ax^2+bx+c$

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

Discriminant
tells how many solutions (ONE, TWO, or NONE)

x-int, zeroes, roots

Using the discriminant, determine how many solutions exist.

1. $x^2-4x+3=0$

$a=1 \quad b=-4 \quad c=3$

b^2-4ac

$(-4)^2-4(1)(3)$

$4>0$

$b^2-4ac>0$

TWO SOLUTIONS

Positive

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

$+x^2 \quad +2x \quad +1$

$0=+x^2+2x+1$

$a=1 \quad b=2 \quad c=1$

$(2)^2-4(1)(1)$

$0=0$

$b^2-4ac=0$

ONE SOLN

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

$-2x \quad -2x$

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

$a=1 \quad b=-2 \quad c=2$

$(-2)^2-4(1)(2)$

$-4<0$

$b^2-4ac<0$

NO SOLN

Negative

Solve using the quadratic formula.

4. $0=-2x^2+7x-3$

$-2 \quad 7 \quad -3$

$a= \quad b= \quad c=$

$x=\frac{-7\pm\sqrt{(7)^2-4(-2)(-3)}}{2(-2)}$

$x=\left\{\frac{1}{2},3\right\}$

5. $x^2-4x-7=0$

$1 \quad -4 \quad -7$

$a= \quad b=$

$x=\frac{-(-4)\pm\sqrt{(-4)^2-4(1)(-7)}}{2(1)}$

Round 2 decimals

$x:\{5.32,-1.32\}$

$\pm$ → two answers
two equations in calc.

FRACTION: ALPHA $y=$

SQUARE ROOT: 2nd x^2

MAKE entry again: 2nd ENTER

EVENS

wheel spun on TUESDAY

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 _____

Answers will be posted at http://www.mskmathrhs.weebly.com.

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. 2 decimals

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

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

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.

changeh to x

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

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

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

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?

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