SOLVING WITH SQUARE ROOTS

agenda

Warm-Up
HW Check
Notes (Flip Book)
HW: Practice #1-13

reminders

Quiz Friday

Algebra Simulation
Tuesday 3/31

WARM-UP TUESDAY

Simplify the following the expressions

1. 12^2 = 144

2. $(-12)^2$ = 144

3. $\sqrt{144}$ = 12 OR -12

± 12

Questions, Comments, Concerns?

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. $4x^2-12x+9=0$

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

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

$12x^2+x-1=0 \Rightarrow (4x-1)(3x+1)=0$

$4x-1=0 \quad 3x+1=0$

$+1 \quad +1 \quad -1 \quad -1$

$\frac{4x}{4}=\frac{1}{4} \quad \frac{3x}{3}=\frac{-1}{3}$

$x=\frac{1}{4} \quad x=\frac{-1}{3}$

$3x \quad 1$

$4x \quad 12x^2 \quad 4x$

$-1 \quad -3x \quad -1$

-12

$2 \quad -6$

$3 \quad -4$

$-3 \quad 4$ ← add to 1

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

$-15 \quad -15$

$x^2+2x-15=0 \Rightarrow (x-3)(x+5)=0$

$x-3=0 \quad x+5=0$

$+3+3 \quad -5 \quad -5$

$\{3,-5\}$

$x \quad -3$

$x \quad x^2 \quad -3x$

$5 \quad 5x \quad -15$

-15

$-3 \quad 5$ ← ADD to 2

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

Given the roots find the quadratic equation.

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

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

$5x=\frac{-2}{5}\cdot 5 \quad x=4$

$-4 \quad -4$

$5x=-2$

$+2 \quad +2$

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

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

$5x \quad +2$

$x \quad 5x^2 \quad 2x$

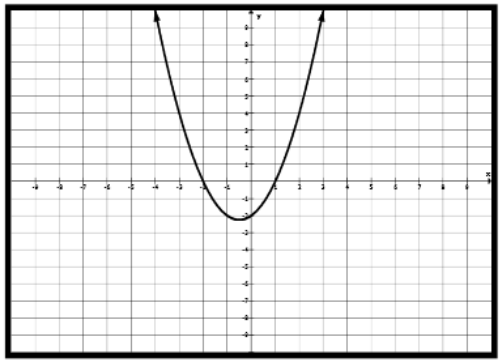
$-4 \quad -20x \quad -8$

$5x^2-18x-8=0$

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 $(x-2)(x-1)=y$



4 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?

5 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. $h=0$

$\frac{0}{-2}=\frac{-16t^2}{-2}+\frac{14t}{-2}+\frac{2}{-2}$

$0=8t^2-7t-1$

$0=(8t+1)(t-1)$

$8t+1=0$ $t-1=0$

$8t=-1$ $t=1$

$\frac{8t}{8}=\frac{-1}{8}$

$t=-\frac{1}{8}$

	$8t$	1
t	$8t^2$	$1t$
-1	$-8t$	-1

-8 | -8 | 1

ADD -7

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.

ALGEBRA 1 SIMULATION 3/31 TUES

2nd, 3rd, and 4th period

Most of us will meet at 8:55AM in the freshmen gym WITH a calculator and pencil. If you are not in the gym, we will let you know. You will test until B-lunch, then you will attend 5th-7th period.

5th period

Go to 1st, 2nd, and 3rd like normal. Then go to A-lunch!!

You will meet at the freshmen gym WITH a calculator and pencil at 12:30 and test until 4:10PM.

If you have taken this class before, please see Ms. K.

SOLVING WITH SQUARE ROOTS

$x^2 = 144$ Inverse operation of square → √ square root

Steps to Solve by Square Roots:

1. Get the squared term alone. ✓
2. Take the square root of both sides (2nd x^2)
3. Don't forget the ±!
4. Finish solving (if necessary)
5. You should have TWO answers

1. $\frac{2(x-10)^2}{2} = \frac{200}{2}$

$(x-10)^2 = 100$

$\sqrt{(x-10)^2} = \sqrt{100}$

$x-10 = \pm 10$

$+10 \quad +10$

$x = 10 \pm 10$

$x-10=10$ OR $x-10=-10$

$+10 \quad +10 \quad +10 \quad +10$

$x=20 \quad x=0$

$\{20, 0\}$

Use this method... When there is ONLY a squared term!

2. $\sqrt{x^2} = \sqrt{225}$

$x = \pm 15$

$\{-15, 15\}$

3. $4x^2 - 25 = 0$

$+25 \quad +25$

$\frac{4x^2}{4} = \frac{25}{4}$

$\sqrt{x^2} = \sqrt{\frac{25}{4}}$

$x = \pm \frac{5}{2}$

4. $x^2 + 100 = 0$

$-100 \quad -100$

$\sqrt{x^2} = \sqrt{-100}$

ERR: NONREAL ANS
1: Quit
2: Goto

no solution

5. $x^2 + 5 = 5$

$-5 \quad -5$

$\sqrt{x^2} = \sqrt{0}$

$x = 0$

$\{0\}$

6. $\frac{4(x+2)^2}{4} = \frac{324}{4}$

$\sqrt{(x+2)^2} = \sqrt{81}$

$x+2 = \pm 9$

$x+2=9$ OR $x+2=-9$

$-2 \quad -2 \quad -2 \quad -2$

$x=7 \quad x=-11$

$\{-11, 7\}$

7.

8. A zookeeper is buying fencing to enclose a pen at the zoo. The pen is an isosceles right triangle. There is already a fence on the side that borders a path. The area of the pen will be 4500 square feet. The zookeeper can buy the fencing in whole feet only. How many feet of fencing should he buy?

2 sides equal

$A = \frac{bh}{2}$

$A = 4500$

$4500 = \frac{x \cdot x}{2}$

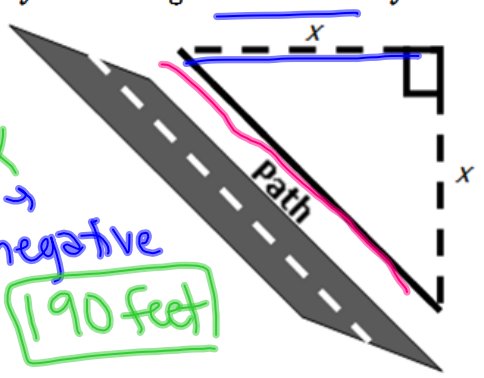
$2 \cdot 4500 = \frac{x^2}{2} \cdot 2$

$\sqrt{9000} = \sqrt{x^2}$

$\pm 94.87 \approx x$

Real world → ignore negative

$2(95) =$ 190 feet



HW #1-13. don't forget the back!

Algebra I – Unit 9: Topic 2 – Solving Quadratics by Using Square Roots

Practice - Solving Quadratics by Using Square Roots **pp 636-641**

Name _____ Date _____ Period _____

"What do you call a funny book about eggs?"

1. $x^2 = 81$
2. $4x^2 - 18 = -9$
3. $2x^2 + 7 = 207$
4. $5 - x^2 = 20$
5. $16x^2 + 10 = 131$
6. $81x^2 + 17 = 81$
7. $x^2 - 29 = 0$
8. $-3x^2 + 200 = 8$

L. $x = \pm\frac{2}{3}$

B. $x = \pm\sqrt{29}$

O. $x = \pm\frac{11}{4}$

K. No real solution

Y. $x = \pm 8$

E. $x = \pm\frac{8}{9}$

K. $x = \pm 9$

A. $x = \pm\frac{3}{2}$

S. $x = \pm\frac{4}{11}$

O. $x = \pm 10$

R. $x = 100$

2	8	5	1	6	7	5	3	4

Algebra I – Unit 9: Topic 2 – Solving Quadratics by Using Square Roots

Solve using square roots.

9. $5(x-1)^2 = 180$

10. $16(x+5)^2 = 1024$

11. Carter plans to wallpaper the longest rectangular wall in his living room. The wall is twice as long as it is high and has an area of 162 square feet. What is the height of the wall?

12. The height of a triangle is twice the length of its base. The area of the triangle is 50 square meters. Find the height and base to the nearest tenth of a meter.

13. Fenway Park is a Major League Baseball park in Boston, Massachusetts. The park offers seats on top of the left field wall. A person sitting in one of these seats accidentally drops his sunglasses on the field. The height, h (in feet), of the sunglasses can be modeled by the function $h = -16t^2 + 38$ where t is the time (in seconds) since the sunglasses were dropped. Find the time it takes for the sunglasses to reach the field. Round your answer to the nearest hundredth of a second.

HW Help: Square Roots

no work = no credit = no kidding!

#1-8, each correct answer is off to the right. Get your squared term alone, then take the square root of both sides. Don't forget the plus/minus!!!!

The joke answer is "A YOKE BOOK". Remember: no work, no credit, no kidding!!

#9, divide both sides by 5 before taking the square root. You should get TWO answers!

#10 Again, you should have TWO answers!

#11, Area = length x width. Your equation should look like $2h^2 = 162$. Remember you cannot have a negative measurement!

#12, Area of a triangle is A= 1/2 b h. Your equation should look like 50 = 1/2 (b) (2b). Round to one decimal place and don't forget to find the height!

#13, the sunglasses reach the field when h=0. Solve for your squared term, square root both sides, and round to TWO decimal places.

Need extra help? Drop by tutorials!!