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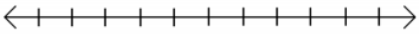
Section 5.2E

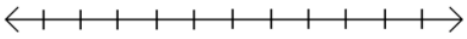
Absolute value can be defined as the distance from zero on a number line.

$|3|$ is the point that is 3 units away from zero



1) Solve the following: $|x| = 8$

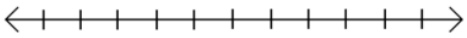
$x = 8$ $\quad x = -8$



2) Solve the following: $|x - 3| = 17$

$x - 3 = 17$ $\quad +3 \; +3$ $\quad x = 20$

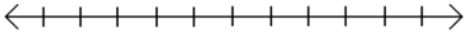
$x - 3 = -17$ $\quad +3 \; +3$ $\quad x = -14$



3) Solve the following: $|34 - 2y| = 12$

$34 - 2y = 12$ $\quad -34 \quad -34$ $\quad -1 \cdot -2y = -22 \cdot -1$ $\quad \frac{2y}{2} = \frac{22}{2}$ $\quad y = 11$

$34 - 2y = -12$ $\quad -34 \quad -34$ $\quad -1 \cdot -2y = -46 \cdot -1$ $\quad \frac{2y}{2} = \frac{46}{2}$ $\quad y = 23$



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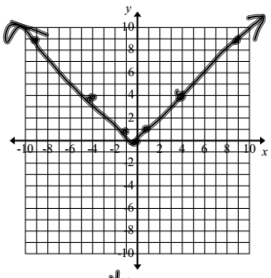
4) Is $f(x) = |x|$ a function?

Create a table of values and graph the points.

x	$\lvert x \rvert$
0	0
1	1
−1	1
4	4
−4	4
9	9
−9	9



5) The square root or radical sign $\sqrt{\ }$ stands for the positive square root of a real number.

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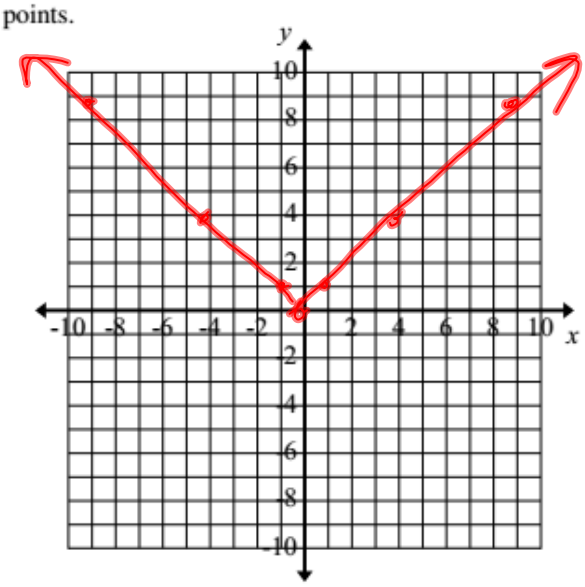
6) The $\sqrt{4}$ stands for the positive value of 2.

7) To find the negative square root you need to write $-\sqrt{4}$, which equals -2.

8) Complete the following table of values and graph the points.

x	$\sqrt{x^2}$
0	0
1	1
–1	1
4	4
–4	4
9	9
–9	9



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9) What conclusions can you draw about the solutions to $f(x) = \sqrt{x^2}$ when compared to the solutions of $f(x) = |x|$?

- same outcome (y values)
- same graph/table

Absolute Value- Square Root Theorem

For all real numbers , $\sqrt{x^2} = |x|$

10) What does this mean? the same

11) The square root of a squared expression is equal to the absolute value of the expression.

$\sqrt{25} \neq \pm 5$

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

$|x| = 5$

$x = 5 \qquad x = -5$

$(5)^2 = 25 \qquad (-5)^2 = 25$

#12 – 16: Solve the following problems. *page 23*

12) $\sqrt{x^2} = \sqrt{72}$ $\quad \sqrt{36}\,\sqrt{2}$, $\sqrt{8}\cdot\sqrt{9}$

$|x| = 6\sqrt{2}$

$x = -6\sqrt{2} \qquad x = 6\sqrt{2}$

$x = \pm 6\sqrt{2}$

13) $3x^2 - 18 = 0$

$+18 \quad +18$

$\frac{3x^2}{3} = \frac{18}{3}$

$\sqrt{x^2} = \sqrt{6}$

$|x| = \sqrt{6}$

$x = \sqrt{6}$, $x = -\sqrt{6}$

take sq. root

Abs. / P E M D A S

14) $\sqrt{(2x-3)^2} = \sqrt{16}$

$|2x-3| = 4$

$2x - 3 = 4 \qquad 2x - 3 = -4$

$+3 \; +3 \qquad +3 \; +3$

$\frac{2x}{2} = \frac{7}{2} \qquad \frac{2x}{2} = \frac{-1}{2}$

$x = 7/2,\ 3.5 \qquad x = -1/2,\ -0.5$

15) $4x^2 - 78 = -29$

$+78 \quad +78$

$\frac{4x^2}{4} = \frac{49}{4}$

$\sqrt{x^2} = \sqrt{12.25}$

$|x| = 3.5$

$x = \pm 3.5$

16) $(x+5)^2 - 4 = 32$

$+4 \quad +4$

$(x+5)^2 = 36$

$\sqrt{(x+5)^2} = \sqrt{36}$

$x+5 = 6$

$-5 \quad -5$

$x = 1$

$x + 5 = -6$

$-5 \quad -5$

$x = -11$

$x = 1,\ x = -11$

$(1+5)^2 - 4 = 32$ ✓

$(-11+5)^2 - 4 = 32$ ✓

UNIT 5 Part 3: Intermediate Algebra B Name: _____ Period: _____

Use this guide to help you evaluate where you are at in this chapter, and identify areas that you need extra help in.
☺=Proficient (you are awesome at this) 😐=Middle (you need some improvement) ☹=Not Proficient (HELP!)

Intermediate Algebra Unit 5 : Solving Quadratic Equations					
Date Covered	**LT Letter**	**Learning Target (LT)** (What you should know)	**Practice Problems**	**Homework Score**	**Self-Evaluation** (Do you know it?)
4/17	8.1A	I can graph absolute value equations and demonstrate understanding of the features of its graph.	8.1A #1-12 (P-173)		☹ 😐 ☺
4/20	8.2 A	I can solve absolute value equations.	8.2A #1-9 (P-183)		☹ 😐 ☺
4/21	5.2 E	I can solve quadratic equations by square roots to get real or complex solutions.	5.2 E #1-8 (P-19)		☹ 😐 ☺
4/22	5.2 F		5.2 F #2-5, 7-15 (P-15)		☹ 😐 ☺
4/23 @ 4:12	5.2 H		5.2 H #1-6, 14-19 (P-29)		☹ 😐 ☺
	5.2 N	I can choose the best method to solve for quadratic equations.	5.2 N #1-3, 5-7, 12-17 (P-41)		☹ 😐 ☺
	5.2 O		5.2 O #1-8 (P-51)		☹ 😐 ☺
4/28	NO CLASS. ACT TESTING!				
4/29	Unit 5 Part 3 Review		Review Packet		☹ 😐 ☺
Test Date: 4/30	Test Reminders:			**TEST TOTAL: # of Questions = Points =**	*Review Done?* **Y/N** *Review Checked with answer key?* **Y/N** *Did you ask about the ones you didn't know how to do?* **Y/N**

Updated 4/17/2015

P-20

8. The stopping distance "d" (in meters) that a car needs to come to a complete stop when traveling at speed "x" (in km/h) can be modeled by the equation $d = 0.009(x+15)^2 + 3$. On a certain road, drivers cannot see a stop sign until they are approximately 20 meters away. What is the maximum speed that should be posted in order to allow cars enough room to stop in time? Round your answer to the nearest whole number and verify your solution.

$d = 20$

$20 = 0.009(x+15)^2 + 3$

$-3 \quad -3$

$17 = 0.009(x+15)^2$

$\frac{17}{0.009} = \frac{0.009(x+15)^2}{0.009}$

$\sqrt{1888.\overline{88}} = \sqrt{(x+15)^2}$

$43.46 = |x+15|$

$43.46 = x+15 \quad -15 \quad -15$

$28.46 = x$

28 km/h

$-43.46 = x+15 \quad -15 \quad -15$

$-58.46 = x$