Solve the following equation. Express the roots as exact values in simplest form.

$$0 = 3x^2 - 12x + 8$$

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

$x = \frac{-(12) \pm \sqrt{(-12)^2 - 4(3)(8)}}{2(3)}$

$y = \frac{12 \pm \sqrt{48}}{6}$

$y = \frac{12 \pm 4\sqrt{3}}{6}$

$y = \frac{6 \pm 2\sqrt{3}}{3}$

Pre-Calculus 110
Unit 6: Absolute Value Functions and Equations

May 14, 2019: Day #1

1. Introduce Absolute Value Function

2. Handout New Assignment

3. Rational Equations Test - ~~When are you writing?~~

Jan 29-9:28 AM

Curriculum Outcomes

AN1: Demonstrate an understanding of the absolute value of real numbers.

RF2. Graph and analyze absolute value functions (limited to linear and quadratic functions) to solve problems.

Jan 29-9:29 AM

Unit 6: Absolute Value

The hottest temperature ever recorded in Saskatoon, Saskatchewan, was 40.6 °C on June 5, 1988. The coldest temperature, −50.0 °C, was recorded on February 1, 1893. You can calculate the total temperature difference as

$-50.0 - 40.6 = d$ or $40.6 - (-50.0) = d$

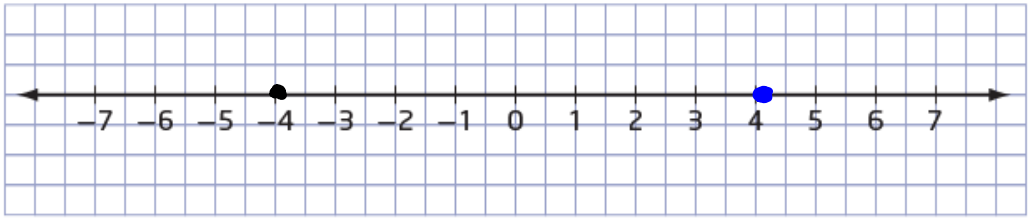
$-90.6 = d$ $90.6 = d$

Generally, you use the positive value, 90.6 °C, when describing the difference. Why do you think this is the case? Does it matter which value you use when describing this situation? Can you describe a situation where you would use the negative value?

May 12-3:03 PM

Investigate Absolute Value p. 359

1. Draw a number line on grid paper that is approximately 20 units long. Label the centre of the number line as 0. Label the positive and negative values on either side of zero, as shown.



2. Mark the values +4 and −4 on your number line. Describe their distances from 0.
3. **a)** Plot two points to the right of zero. How many units are between the two points?
   b) Calculate the distance between the two points in two different ways.
4. Repeat step 3 using two points to the left of zero.
5. Repeat step 3 using one point to the right of zero and one point to the left.

6. What do you notice about the numerical values of your calculations and the number of units between each pair of points you chose in steps 3, 4, and 5?

7. What do you notice about the signs of the two calculated distances for each pair of points in steps 3, 4, and 5?

Reflect and Respond

8. Identify three different sets of points that have a distance of 5 units between them. Include one set of points that are both positive, one set of points that are both negative, and one set containing a positive and a negative value. How did you determine each set of points?

9. Explain why the distance from 0 to +3 is the same as the distance from 0 to −3. Why is the distance referred to as a positive number?

May 12-3:17 PM

Unit #6

absolute value

The absolute value of a number is the distance of that number from zero on a number line.

Absolute value is represented by two vertical bars around a number or an expression.

Absolute value is always a positive number.

In general, the absolute value of a real number a is defined as

$$|a| = \begin{cases} a, \text{ if } a \geq 0 \\ -a, \text{ if } a < 0 \end{cases}$$

May 12-3:17 PM

$|-6| = 6$

$|-4+6-7| = 5$

May 14-1:19 PM

Example 1

Determining the Absolute Value of a Number

Evaluate the following.

a) $|3| = 3$

b) $|-7| = 7$

Your Turn

Evaluate the following.

a) $|9| = 9$

b) $|-12| = 12$

May 12-3:24 PM

Example 2

Compare and Order Absolute Values

Write the real numbers in order from least to greatest.

$|-6.5|, 5, |4.75|, -3.4, \left|-\frac{12}{5}\right|, |-0.1|, -0.01, \left|-2\frac{1}{2}\right|$

$-3.4, -0.01, |-0.1|, \left|-\frac{12}{5}\right|, \left|-2\frac{1}{2}\right|, |4.75|, 5, |-6.5|$

May 12-3:25 PM

Example 3

Evaluating Absolute Value Expressions

Evaluate the following.

a) $|4| - |-6|$ **b)** $5 - 3|2 - 7|$ **c)** $|-2(5-7)^2 + 6|$

a) $4 - 6$

$= -2$

b) $5 - 3(5)$

$5 - 15$

$= -10$

$|-2(-2)^2 + 6|$

$|-2(4) + 6|$

$|-8 + 6|$

$|-2|$

$= 2$

Your Turn

Evaluate the following.

a) $|-4| - |-3|$ **b)** $|-12 + 8|$ **c)** $|12(-3) + 5^2|$

a) $4-3$
$= 1$

b) $|-4|$
$= 4$

c) $|-36+25|$
$|-11|$
$= 11$

May 12-3:27 PM

Example 4

Change in Stock Value

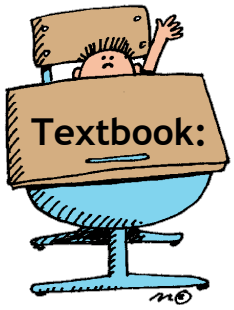
On stock markets, individual stock and bond values fluctuate a great deal, especially when the markets are volatile. A particular stock on the Toronto Stock Exchange (TSX) opened the month at $13.55 per share, dropped to $12.70, increased to $14.05, and closed the month at $13.85. Determine the total change in the value of this stock for the month. This total shows how active the stock was that month.

$|13.55-12.70|+|12.70-14.05|+|14.05-13.85|$

$|0.85|+|-1.35|+|0.20|$

$0.85+1.35+0.20$

≈ 2.40



Minimum Preparation:

p. 363-367
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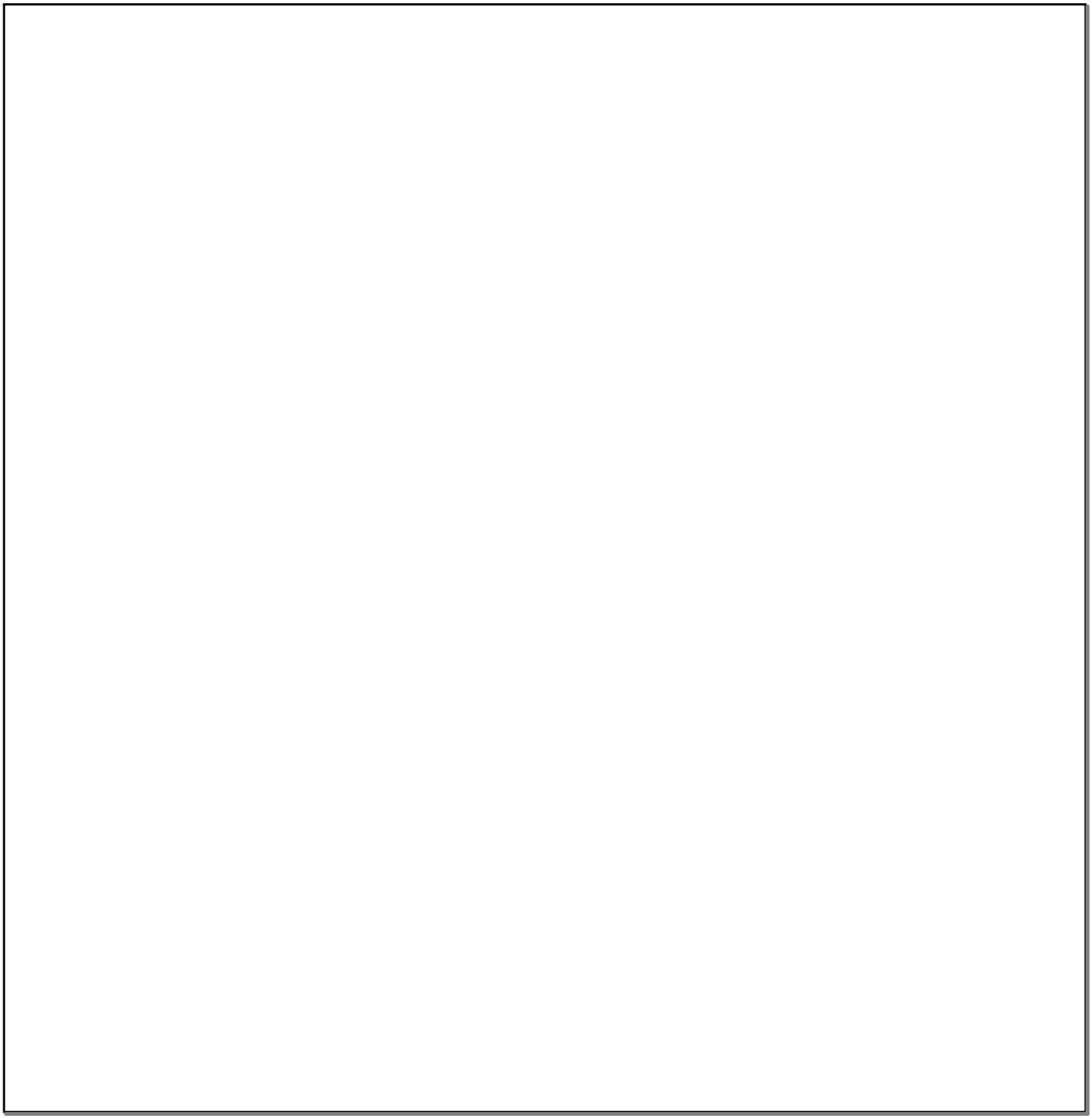
1 ace, 2, 4, 5, 6 acde, 7 ace, 8, 10, 12, 14, 18, 21, 22, 23

Jan 29-10:15 AM



May 23-2:35 PM

Attachments

Standard Form Demor.GSP

Warm ups.notebook