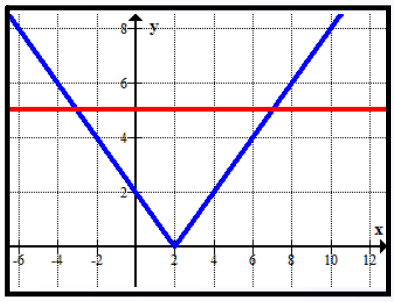
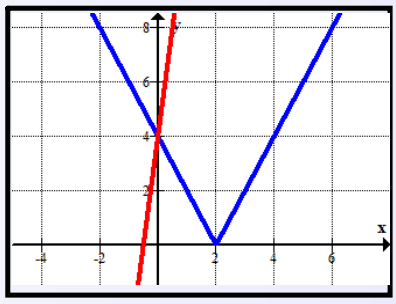
Use the graphs shown to solve each absolute value equation.

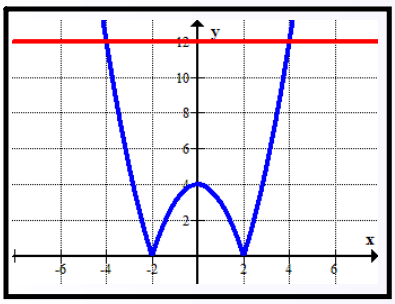
$|x - 2| = 5$



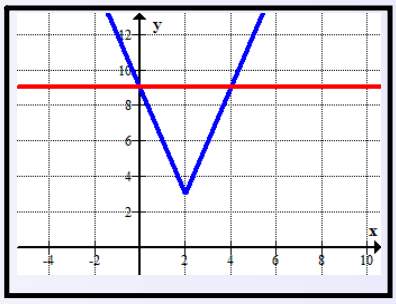
$|2x - 4| = 8x + 4$



$|x^2 - 4| = 12$



$|3x - 6| + 3 = 9$



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

May 27, 2019: Day #7

1. Assignment Due today - Test on Wednesday

2. Review any textbook questions?

p. 389-391

4, 5, 6ace, 7, 9, 15, 16, 20, 22, 23

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

Topics:

Absolute value expressions

Absolute value graphs (linear and quadratic, domain and range, intercepts)

Piecewise Functions

Absolute value functions from tables

Absolute value functions from graphs

Absolute value equations (linear and quadratic)

Absolute value equations - graphical solution

May 27-7:46 PM

Multiple Choice

For #1 to #5, choose the best answer.

1. The value of the expression $|-9-3|-|5-2^3|+|-7+1-4|$ is

   A 13

   B 19

   C 21

   D 25

2. The range of the function $f(x)=|x-3|$ is

   A $\{y \mid y>3, y \in \mathrm{R}\}$

   B $\{y \mid y \geq 3, y \in \mathrm{R}\}$

   C $\{y \mid y \geq 0, y \in \mathrm{R}\}$

   D $\{y \mid y>0, y \in \mathrm{R}\}$

3. The absolute value equation $|1-2x|=9$ has solution(s)

   A $x=-4$

   B $x=5$

   C $x=-5$ and $x=4$

   D $x=-4$ and $x=5$

May 20-9:27 AM

Short Answer

6. Consider the function $f(x) = |2x - 7|$.

- **a)** Sketch the graph of the function.
- **b)** Determine the intercepts.
- **c)** State the domain and range.
- **d)** What is the piecewise notation form of the function?

7. Solve the equation $|3x^2 - x| = 4x - 2$ algebraically.

8. Solve the equation $|2w - 3| = w + 1$ graphically.

9. Determine the error(s) in the following solution. Explain how to correct the solution.

Solve $|x - 4| = x^2 + 4x$.

Case 1

$x + 4 = x^2 + 4x$
$0 = x^2 + 3x - 4$
$0 = (x + 4)(x - 1)$
$x + 4 = 0$ or $x - 1 = 0$
$x = -4$ or $x = 1$

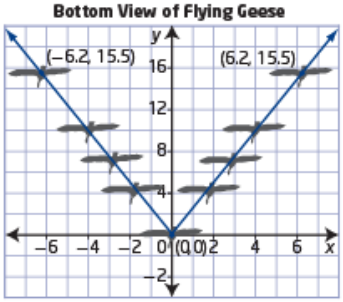
Case 2

$-x - 4 = x^2 + 4x$
$0 = x^2 + 5x + 4$
$0 = (x + 4)(x + 1)$
$x + 4 = 0$ or $x + 1 = 0$
$x = -4$ or $x = -1$

The solutions are $x = -4$, $x = -1$, and $x = 1$.

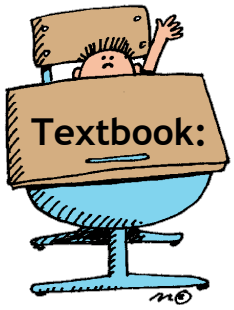
11. A biologist studying Canada geese migration analysed the vee flight formation of a particular flock using a coordinate system, in metres. The centre of each bird was assigned a coordinate point. The lead bird has the coordinates (0, 0), and the coordinates of two birds at the ends of each leg are (6.2, 15.5) and (−6.2, 15.5).

Bottom View of Flying Geese



a) Write an absolute value function whose graph contains each leg of the vee formation.

May 20-9:32 AM



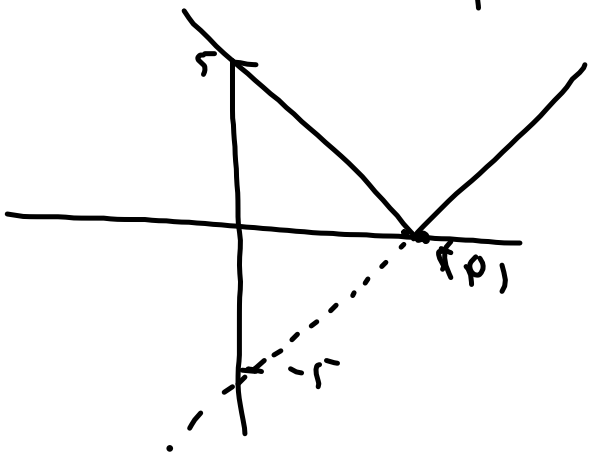
Minimum Preparation:

p. 410-411 # 1, 2, 3, 6, 7, 8, 9, 11, 12

p. 413 # 1, 2, 3, 6, 7, 8, 9

Jan 29-10:15 AM

$y = |x - 5|$



$$y \begin{cases} x - 5, & x \geq 5 \\ -(x-5), & x < 5 \end{cases}$$

May 27-1:12 PM

May 30-1:42 PM

Attachments

Standard Form Demor.GSP

Warm ups.notebook