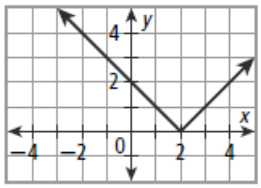
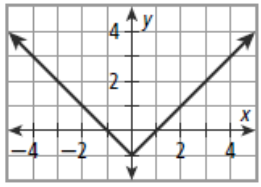
Warm Up:

Think of any questions you may have from 2-6 through 2-9

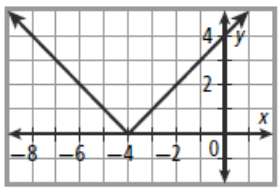
9. $g(x) = f(x - h)$
$g(x) = |x - 2|$



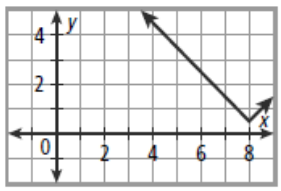
10. $g(x) = f(x) - k$
$g(x) = |x| - 1$



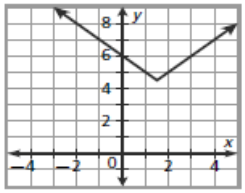
11. $g(x) = f(x - h)$
$g(x) = |x - (-4)|$
$g(x) = |x + 4|$



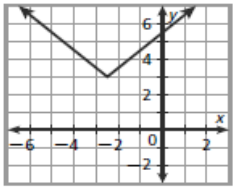
12. $g(x) = |x - h| + k$
$g(x) = |x - 8| + 0.5$



13. $g(x) = |x - h| + k$
$g(x) = |x - 1.5| + 4.5$



14. $g(x) = |x - h| + k$
$g(x) = |x - (-2.5)| + 3$
$g(x) = |x + 2.5| + 3$



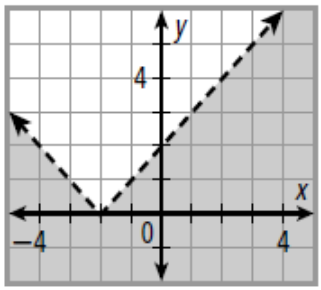
22. $g(x) = |x - 12| + 8$
Vertex = (12, 8)

23. $g(x) = |x + 5| + 9$
Vertex = (−5, 9)

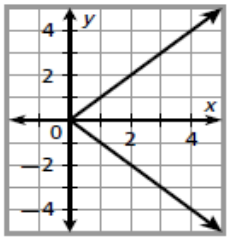
24. $g(x) = 6 + |x - 7|$
$g(x) = |x - 7| + 6$
Vertex = (7, 6)

33) D 34) H 35) B 36) G 37) C

38. $y < |x + 2|$



42. $x = |y|$ is not a function, because for every nonzero x-value there are 2 different y-values.



2-6: Transforming Functions

There are 6 things you can do to a function. We will look at each and an example for the function 3x + 7

Vertical translation: Just add/subtract to the end of the function. Go down 4...

$3x+7-4$
$3x+3$

Horizontal translation: Add/subtract to just the x-variable. Adding goes left and subtracting goes right. Go right 5...

$3(x-5)+7$
$3x-15+7=3x-8$

Reflect over x axis: Multiply entire function by -1.

$-(3x+7)$

$-3x-7$

Reflect over y axis: Multiply just x by -1.

$3(-x)+7$

$-3x+7$

Vertical stretch: Multiply entire function by the factor. Vertical stretch by factor of 3/2.

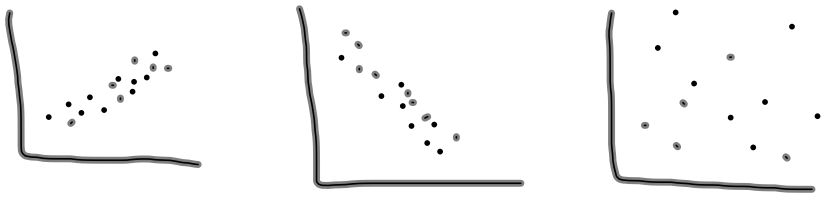
$\frac{3}{2}(3x+7) = \frac{9}{2}x+\frac{21}{2}$

Horizontal stretch: Multiply just the x-variable by 1/factor. Horizontal stretch by factor of 4/3.

$3\left(\frac{1}{4/3}x\right)+7$

2-7: Curve Fitting

Correlation. There are 3 types...



Line of best fit: a line that takes the best "average" of the data. Plug points into calculator and then use LinReg to find the best fit line.

L_1 L_2

Correlation coefficient: the letter r on the calculator. We want this to be as close to 1 or -1 as possible. 1 means positive correlation and -1 means negative correlation.

2-8: Absolute Value and Inequalities

Disjunction: Uses the word "or" and your arrows on the graph will point away from each other.

Conjunction: Uses the word "and", you will have just a single line on your graph.

To solve compound inequality, solve both sides for x and then graph. Remember "or" has 2 lines, "and" has 1 line.

$x - 5 < 12$ OR $6x \leq 12$

$x < 17$ $x \leq 2$

2. $\frac{1}{2}c \geq -2$ AND $2c + 1 < 1$

$c \geq -4$ AND $c < 0$

Solving absolute value equations:
Isolate the absolute value and then solve for the variable
Ex: 5 + |x-4| = 10

$|x-4| = 5$

$x - 4 = 5$ $x - 4 = -5$

$x = 9$ or $x = -1$

To solve an inequality with an absolute value you will need to write a positive and negative expression as well as knowing that a greater than sign encompasses an "or" and a less than sign has "and".

Solve the compound inequality. Then graph the solution set.

$$\frac{|x-5|}{2} \leq 4$$

$|x-5| \leq 8$

$x-5 \leq 8$ AND $x-5 \geq -8$

$x \leq 13$ AND $x \geq -3$

2-9: Absolute value functions

Transforming: If there is adding or subtracting outside the absolute value bars then it is moving the equation up or down.

If there is adding or subtracting inside the absolute value bars then it is moving the function left or right.

Translate f(x) = |x| 3 units up and 4 units right.

$|x-4|+3$

Translate f(x) = |x| 2 units down and 5 units to the left.

$|x+5|-2$

The vertex of the absolute value function is the point on the "V". You can adjust equations based on the vertex as well.

What is the absolute value function if the vertex is at (3, -4)?

R3 ↓4

$|x-3|-4$

What is the absolute value function if the vertex is (-6, 2)?

L6 ↑2 $|x+6|+2$

Any other questions you may have or want to try before taking the quiz?

$|x-3| \geq 7$

$x-3 \geq 7$ OR $x-3 \leq -7$

$x \geq 10$ OR $x \leq -4$

When finished with the quiz turn it in and start on your review assignment. THIS WILL BE COLLECTED on Tuesday! You will have some time to work on it Monday in class as well.

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p. 165 #1-17