Name Key Date _____ Hour _____

Algebra 2 3Tri Absolute Value and Scatter Plot Review

Graph each and answer the function questions for #34.

32. $y = ||x| - 4$

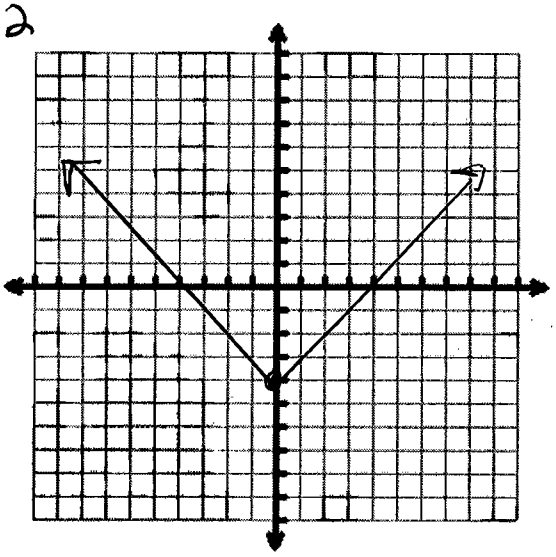
33. $y = |x - 1| - 5$

34. $y = -|x + 4| + 3$

35. $y = 2|x + 1|$

37. $y = -\frac{1}{2}|x + 2| - 3$

32



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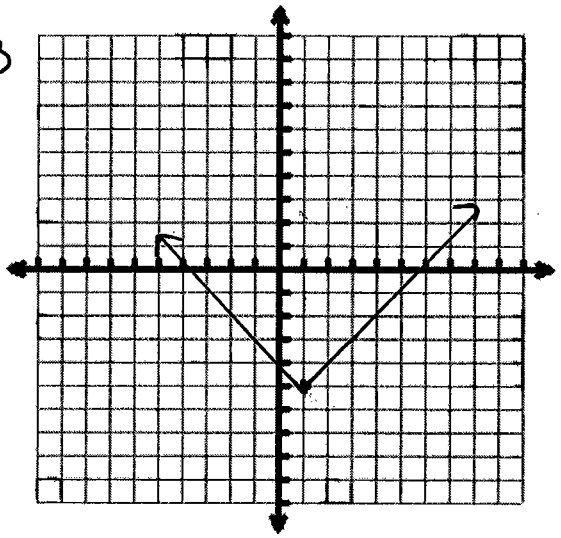

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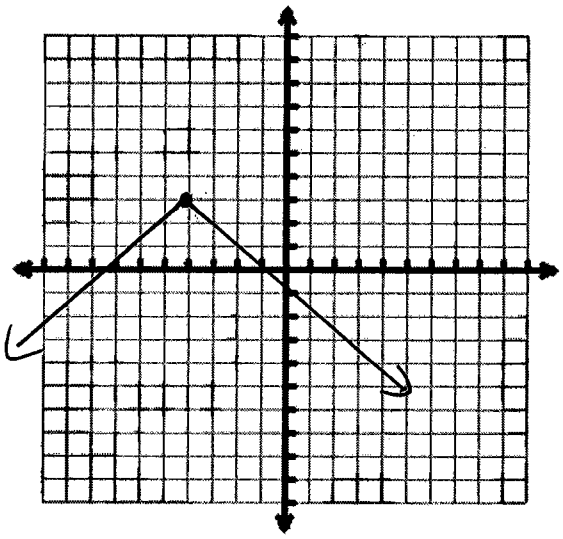

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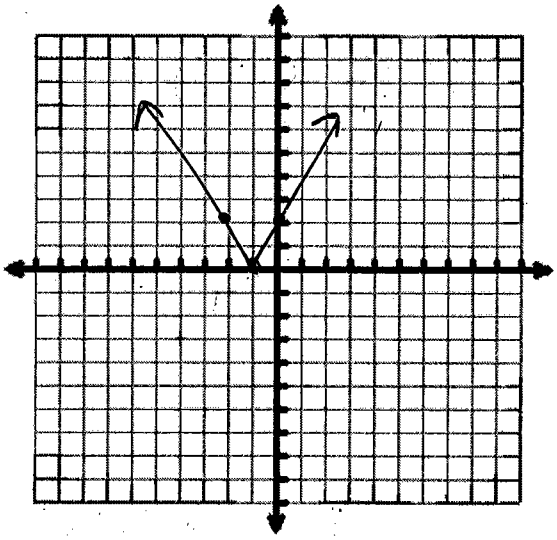

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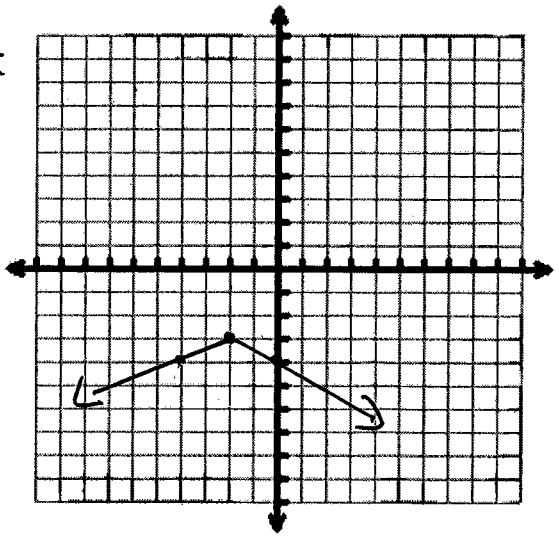
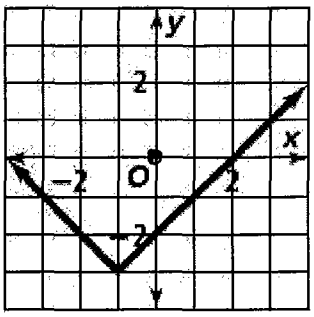
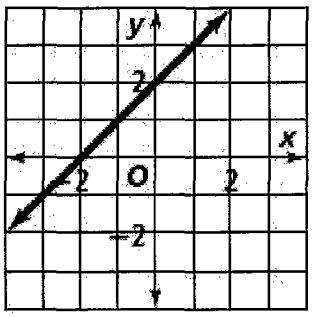


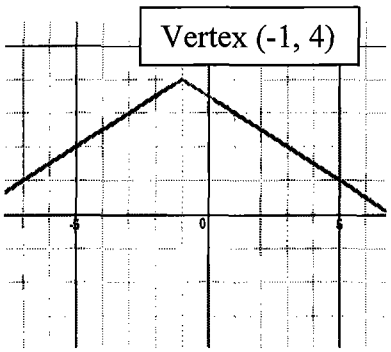
Function Questions:
#34
Domain: $\mathbb{R}$
Range: $(-\infty, 3]$
Increasing: $(-\infty, -4)$
Decreasing: $(-4, \infty)$
x-intercept(s): -7 & -1
y-intercept: -1

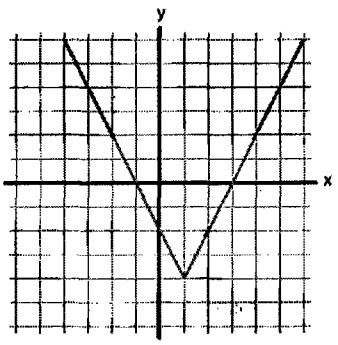
Write an equation for each function.

1. $y = |x+1| - 3$ 2. $y = x + 2$ 3. $y = -\frac{1}{2}|x+1| + 4$ 4. $y = 2|x-1| - 4$









For #5 – 7, write an equation for the given transformations of $y = |x|$.

5. Up 4, Right 8

$y = |x-8| + 4$

6. Left 2, Narrowed by a factor of 5, Up 9

$y = 5|x+2| + 9$

7. Reflected across the x-axis, Down 2, Right 3, Widened by a factor of $\frac{3}{4}$.

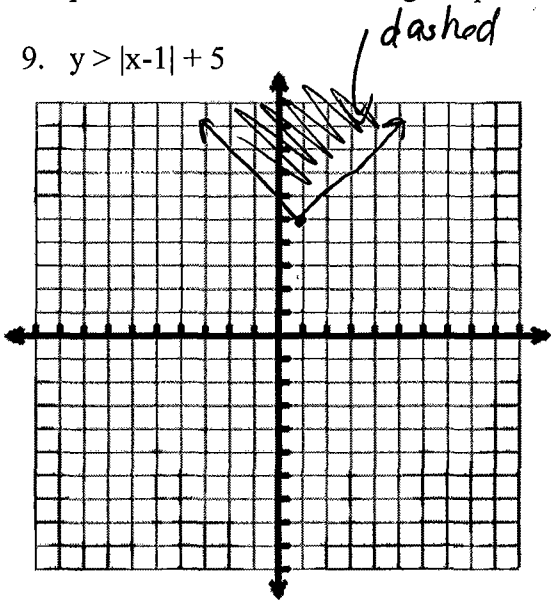
$y = -\frac{3}{4}|x-3| - 2$

8. The coca-cola company packages their mini-cans in 8oz increments. They allow for a margin of error of 0.045 ounces. Write an absolute value equation and solve to find the lowest and highest number of ounces that would be allowed in their mini-cans.

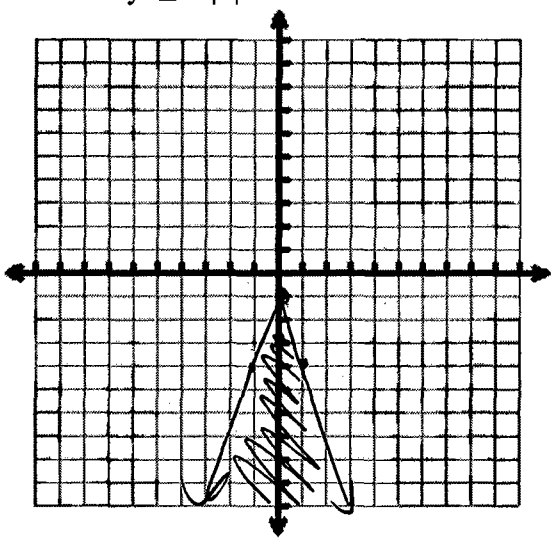
$.045 = |x-8|$ 7.955 to 8.045

Graph and shade the following inequalities.

9. $y > |x-1| + 5$



10. $y \leq -3|x| - 1$



11.

Anthropologists use a linear model that relates femur length to height. The model allows an anthropologist to determine the height of an individual when only a partial skeleton (including the femur) is found. In this problem we find the model by analyzing the data on femur length and height for the ten males given in the table.

Femur Length (cm)	Height (cm)
50.1	178.5
48.3	173.6
45.2	164.8
44.7	163.7
44.5	168.3
42.7	165.0
39.5	155.4
38.0	155.0

a. Which type of regression equation models the data the best?

linear

b. What is the regression equation?

$y = 1.92x + 80.68$

c. If an anthropologist finds a femur of length 58 cm, how tall was the person?

192.04 cm

d. If a person is 151 cm tall, what does the model predict for their femur length?

36.625 cm

e. Using the r-value, describe the relationship between femur length and height.

r = .965, strong & positive

12. The table shows the temperature change during a 10 hour snow storm. Using this information, experts can predict the temperature in the upcoming hours.

Time since start of Snow Storm (hours)	Temperature (degrees Fahrenheit)
1	26
2	24
3	18
4	16
5	10
6	12
7	14
8	20
9	23
10	27

a. Which type of regression equal models the data the best?

Quadratic

b. What is the regression equation?

$y = .74x^2 - 8.11x + 35.07$

c. In the 12th hour, predict the temperature.

44.31°

13. Solve each absolute value. Check your answers. Circle all final answers. Any extraneous solutions, cross off.

a. $|2x+1| = -9$

no solutions

c. $\frac{|x-1|}{4} + 7 = 12$

$\frac{|x-1|}{4} = 5$

$|x-1| = 20$

$x-1 = 20$ $\quad$ $x-1 = -20$

$x = 21$ $\quad$ $x = -19$

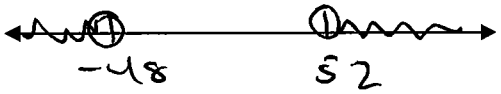
b. $\frac{1}{5}|x-2|+3 > 13$

$\frac{1}{5}|x-2| > 10$

$|x-2| > 50$

$x-2 > 50$ $\quad$ $x-2 < -50$

$x > 52$ $\quad$ $x < -48$

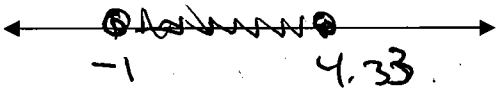


d. $|3x-5|-6 \leq 2$

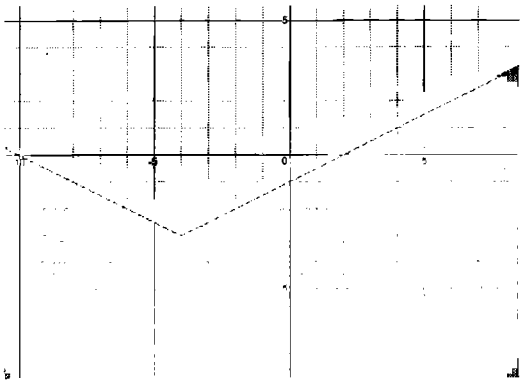
$|3x-5| \leq 8$

$3x-5 \leq 8$ $\quad$ $3x-5 \geq -8$

$x \leq \frac{13}{3}$ $\quad$ $x \geq -1$



14. Write the equation of the inequality graph below.



$y \leq \frac{1}{2}|x+4| - 3$