

Advanced Algebra  
Chapter 2 Test Review

Name Key

1. A 3 mile cab ride costs \$3.00 and a 6 mile cab ride costs \$4.80. (mi, \$)

- a. Find the linear model for the situation presented above.  $y = 0.6x + 1.20$

(3mi, \$3) (6mi, \$4.80)

$$\frac{4.80 - 3}{6 - 3} = \frac{1.80}{3 \text{ mi}} = \frac{0.60}{1 \text{ mi}}$$

$$\begin{aligned} y - 4.80 &= 0.6(x - 6) \\ y - 4.80 &= 0.6x - 3.6 \\ y &= 0.6x + 1.20 \end{aligned}$$

- b. How much does a 10 mile cab ride cost? \$ 7.20

$$\begin{aligned} y &= 0.6x + 1.20 \\ y &= 0.6(10) + 1.20 \\ y &= 6 + 1.20 \end{aligned} \quad \rightarrow \quad \begin{aligned} y &= 7.20 \\ (10 \text{ mi}, \$7.20) \end{aligned}$$

- c. How many miles can you ride if you have \$6.00 for cab fare? 8 miles

$$\begin{aligned} y &= 0.6x + 1.20 \\ 6 &= 0.6x + 1.20 \\ 4.80 &= 0.6x \end{aligned} \quad \rightarrow \quad \begin{aligned} x &= 8 \\ (8 \text{ mi}, \$6) \end{aligned}$$

- d. Describe in context what the value of the slope represents.  $\frac{\$0.60}{1 \text{ mi}}$ ; the cost increases \$0.60 for every additional mile driven

- e. Describe in context what the value of the y-intercept represents. (0, \$1.20) for driving 0 miles, the fare is \$1.20 (base fee is \$1.20)

2. Use the following data:  $\{(2, 7), (-2, 1), (5, 13), (0, 5)\}$ . Use your calculator to complete the following:

- a. Make a scatterplot; record your window. Xmin -3, Xmax 6, Xscl 1, Ymin -1, Ymax 15, Yscl 1 (these are example values)

- b. Find the equation for the line of best fit.  $y = 1.664x + 4.421$

- c. Draw the line of best fit. Is the relationship positive or negative; strong or weak? Explain.

Strong positive because  $r = 0.993$

3. Find the x- and y-intercepts of the line  $x - 4y = 5$ . x-intercept (5, 0) y-intercept (0, -1.25)

$$\begin{aligned} x - 4y &= 5 & x - 4y &= 5 \\ x - 4(0) &= 5 & 0 - 4y &= 5 \\ x - 0 &= 5 & -4y &= 5 \\ x &= 5 & y &= -1.25 \end{aligned}$$

Write an equation of a line that meets the following conditions.

4. Write the equation of a line in slope-intercept form that has is parallel to  $2x - y = 10$  and passes through the point  $(-5, 1)$ .

(1st)  
Find slope

$$\begin{aligned} 2x - y &= 10 \\ -y &= -2x + 10 \\ y &= 2x - 10 \\ m &= 2 \quad m_{\perp} = -2 \end{aligned}$$

(2nd)  
use point-slope form

$$\begin{aligned} (-5, 1) \quad m &= 2 \\ y - y_1 &= m(x - x_1) \\ y - 1 &= 2(x + 5) \\ y - 1 &= 2x + 10 \\ \boxed{y} &= \boxed{2x + 11} \end{aligned}$$

**Write an equation of a line that meets the following conditions.**

5. Write the equation of a line in slope-intercept form that passes through the points  $(-2, 5)$  and  $(-3, 10)$ .

1st Find slope  $\frac{10-5}{-3-2} = \frac{5}{-1} = -5$

2nd use point-slope form  $y - y_1 = m(x - x_1)$   
 $y - 5 = -5(x + 2)$   
 $y - 5 = -5x - 10$   
 $y = -5x + 5$

6. Write the equation of a line in slope-intercept form that has an x-intercept of 4 and a y-intercept of 6.

1st Find slope  $m = \frac{6-0}{0-4} = \frac{6}{-4} = -\frac{3}{2}$

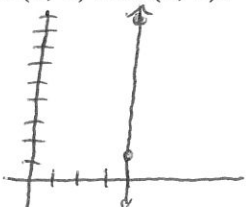
2nd write equation in slope intercept form  $y = mx + b$   
 $y = -\frac{3}{2}x + 6$

(4,0) (0,6)

7. Write the equation of a line that contains the points  $(4, 1)$  and  $(4, 9)$ .

1st Find slope  $m = \frac{9-1}{4-4} = \frac{8}{0} = \text{undefined}$   
 $\hookrightarrow$  vertical line

$x = 4$



8. Write an example of an equation of a line that is in:

<p>slope-intercept form</p> <p><math>y = mx + b</math> <math>m = \text{slope}</math> <math>b = y \text{ int}</math></p> <p>Ex: <math>y = \frac{3}{2}x - 6</math></p>	<p>standard form</p> <p><math>Ax + By = C</math> <math>A, B, C \text{ are integers}</math></p> <p><math>4x - 9y = 13</math> <math>A \text{ is positive}</math> <math>A \text{ and } B \text{ both } \neq 0</math></p>	<p>point-slope form</p> <p><math>y - y_1 = m(x - x_1)</math> <math>m = \text{slope}</math></p> <p><math>y - 6 = -\frac{1}{3}(x - 12)</math> <math>(x_1, y_1) = \text{point}</math></p>
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9. Write an equation of a line in slope-intercept form that contains  $(6, -4)$  and is perpendicular to  $2x - 3y = 3$ .

1st  $2x - 3y = 3$   
 $-3y = -2x + 3$   
 $y = \frac{2}{3}x - 1$   
 $m = \frac{2}{3}$   $m_{\perp} = -\frac{3}{2}$

2nd use point-slope form  $y - y_1 = m(x - x_1)$   
 $y + 4 = -\frac{3}{2}(x - 6)$   
 $y + 4 = -\frac{3}{2}x + 9$   
 $y = -\frac{3}{2}x + 5$

10. Evaluate  $f(x) = 6x^2 - 3x$  for  $f(-4)$ .

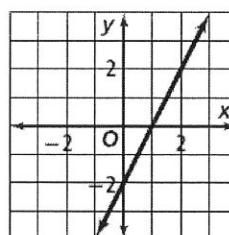
$f(-4) = 6(-4)^2 - 3(-4)$   
 $f(-4) = 6(16) - 3(-4)$   
 $f(-4) = 96 + 12$   
 $f(-4) = 108$   
 $(-4, 108)$

11. Write the equation of the line of the graph in slope-intercept form.

Slope  $m = \frac{\text{rise}}{\text{run}} = \frac{2}{1} = 2$

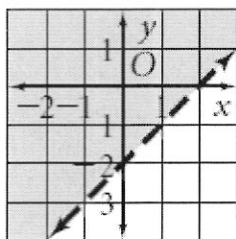
y int =  $(0, -2)$

$y = mx + b$   
 $y = 2x - 2$

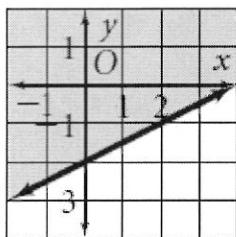


Write an inequality for each graph.

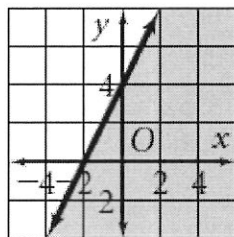
12.  $y > x - 2$



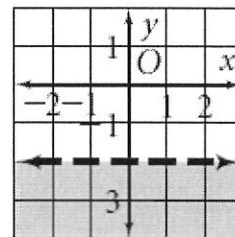
13.  $y \geq \frac{1}{2}x - 2$



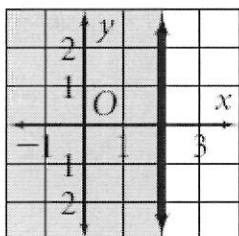
14.  $y \leq 2x + 4$



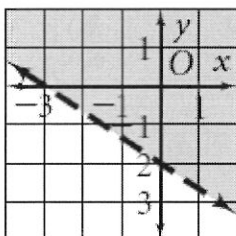
15.  $y < -2$



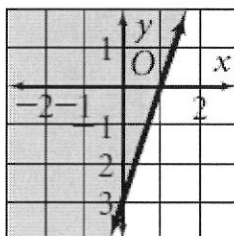
16.  $x \leq 2$



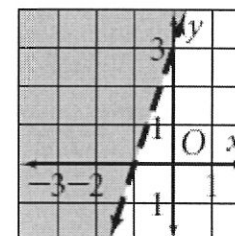
17.  $y > -\frac{2}{3}x - 2$



18.  $y \geq 3x - 3$

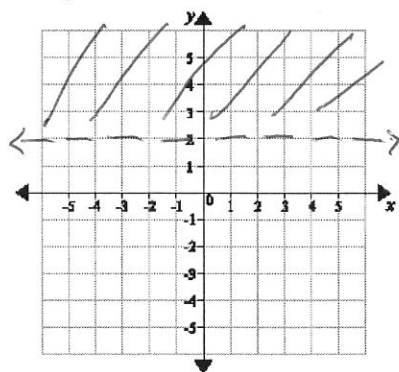


19.  $y > 3x + 3$

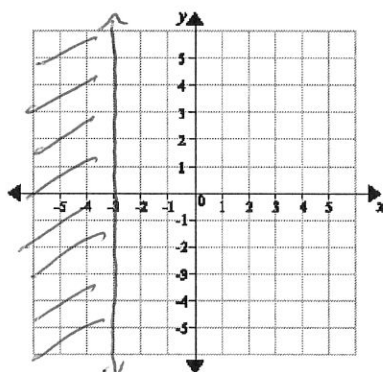


Graph each inequality. For the absolute value inequalities, make a t-chart that contains the vertex.

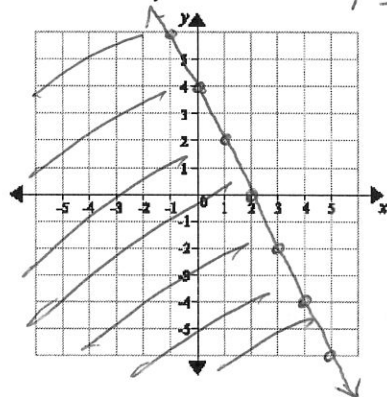
20.  $y > 2$



21.  $x \leq -3$

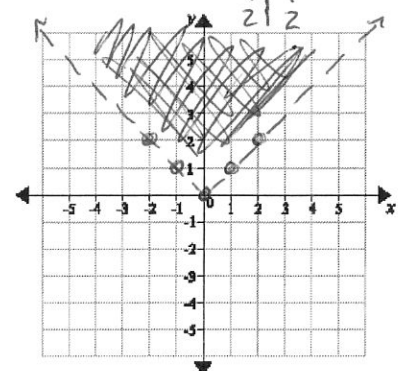


22.  $4x + 2y \leq 8$   
 $\rightarrow 2y \leq -4x + 8$   
 $y \leq -2x + 4$



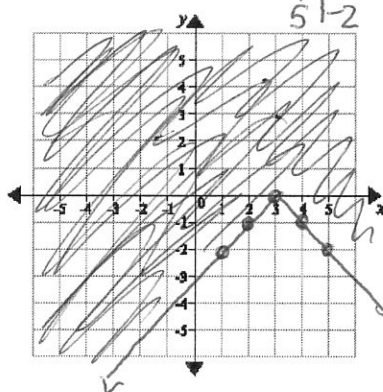
23.  $y > |x|$

x	y
-2	2
-1	1
0	0
1	1
2	2



24.  $y \geq -|x - 3|$

x	y
1	-2
2	-1
3	0
4	-1
5	-2



25.  $y \geq 2|x + 1| - 3$

x	y
-3	1
-2	-1
-1	-3
0	-1
1	1

