

Chapter 1: Equations and Inequalities

Simplify the expression.

1).  $25x + 14 - 17 - 6x$

$$\boxed{19x - 3}$$

2).  $6y + 12x - 12y - 9x$

$$\boxed{3x - 6y}$$

3).  $6(x-2) - 8x + 40$

$$6x - 12 - 8x + 40$$

$$\boxed{-2x + 28}$$

4).  $5(2x + 3) + 8(x - 6)$

$$10x + 15 + 8x - 48$$

$$\boxed{18x - 33}$$

Solve the equation.

1).  $-6x - 8 = 10$

$$-6x = 18$$

$$\boxed{x = -3}$$

2).  $-5 + 36x = 175$

$$36x = 180$$

$$\boxed{x = 5}$$

3).  $16 + \frac{x}{6} = 14$

$$\frac{x}{6} = -2$$

$$\boxed{x = -12}$$

4).  $\frac{x-10}{-2} = 12$

$$x - 10 = -24$$

$$\boxed{x = 14}$$

5).  $-7x - 14 = -2x + 11$

$$-5x = 25$$

$$\boxed{x = -5}$$

6).  $-17x + 23 = -4 - 8x$

$$27 = 9x$$

$$\boxed{x = 3}$$

7).  $2(x - 3) = 4x + 6$

$$2x - 6 = 4x + 6$$

$$12 = 2x$$

$$\boxed{x = 6}$$

8).  $\frac{10(x-2)}{5} = 14$

$$10x - 20 = 70$$

$$10x = 90$$

$$\boxed{x = 9}$$

9).  $7 - 5x = 10 - (6x + 7)$

$$7 - 5x = 10 - 6x - 7$$

$$7 - 5x = 3 - 6x$$

$$4 = -x$$

$$\boxed{x = -4}$$

10).  $4(x-3) - x = x-6$

$$4x - 12 - x = x - 6$$

$$3x - 12 = x - 6$$

$$2x = 6$$

$$\boxed{x = 3}$$

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Review (Sections R.2, R.3, 1.1, 1.2, 1.7, 1.8)

11).  $\frac{7x+4}{3} = 2x - 1$

$7x+4 = 6x-3$

$x = -7$

12).  $\frac{2x+11}{3} = \frac{x+5}{2}$

$2(2x+11) = 3(x+5)$

$4x+22 = 3x+15$

$x = -7$

Solving for a Specified Variable

1). Solve  $A - P = Prt$ , for  $P$

$A = Prt + P$

$A = P(rt + 1)$

$\frac{A}{rt+1} = P$

2).  $S = 2\pi rh + 2\pi r^2$ , for  $h$

$S - 2\pi r^2 = 2\pi rh$

$\frac{S - 2\pi r^2}{2\pi r} = h$

Word Problems

1. A New York City taxi charges \$2.50, plus \$0.40 for each fifth of a mile if it is not delayed by traffic. Write an expression for the cost of the ride if you travel  $x$  miles in the taxi with no traffic delays.

$x = \text{miles}$

$2.50 + 0.4(5x)$

$2.50 + \frac{2}{5}(5x)$

$0.4 = \frac{4}{10} = \frac{2}{5}$

$2.50 + 2x$

2. You buy a jacket, and the sales tax is 6%. The total cost is \$74.49. Find the cost of the jacket before the tax.

0.06

$74.49 = (1.06)J$

$70.27 = J$

$\$70.27$

3. It takes 3 hours for a train to travel 175 miles. What is the average speed of the train?

$\frac{175}{3} = 165.01 \text{ m/h}$

$165.01 \text{ mph}$

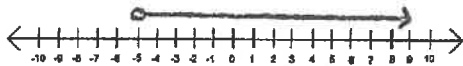
Honors Algebra 2 with Trig  
Review (Sections R.2, R.3, 1.1, 1.2, 1.7, 1.8)

Solve the inequality. Then graph the solution.

1).  $15x + 8 > 9x - 22$

$$6x > -30$$

$$x > -5$$

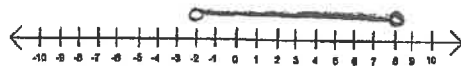


2).  $-5 < 3 - x < 5$

$$-8 < -x < 2$$

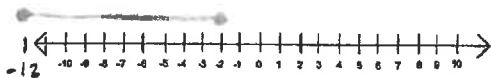
$$8 > x > -2$$

$$-2 < x < 8$$



3).  $-4 \leq g + 8 < 6$

$$-12 \leq g < -2$$



4).  $m - 7 \geq -3$  or  $-2m + 1 \geq 11$

$$m \geq 4 \text{ or } -2m \geq 10$$

$$\text{or } m \leq -5$$



Solve the equation. Check for extraneous solutions.

1).  $|3x + 2| = 7$

$$3x + 2 = -7 \text{ and } 3x + 2 = 7$$

$$3x = -9$$

$$3x = 5$$

$$x = -3$$

$$x = 5/3$$

$$x = 5/3, -3$$

2).  $|9x - 5| = 2x$

$$9x - 5 = -2x \text{ and } 9x - 5 = 2x$$

$$11x = 5$$

$$7x = 5$$

$$x = 5/11$$

$$x = 5/7$$

$$x = 5/11, 5/7$$

3).  $3|2x - 3| - 5 = 4$

$$3|2x - 3| = 9$$

$$|2x - 3| = 3$$

$$2x - 3 = -3 \text{ and } 2x - 3 = 3$$

$$2x = 0$$

$$2x = 6$$

$$x = 0$$

$$x = 3$$

$$x = 0, 3$$

4).  $-2|5y - 1| = -10$

$$5y - 1 = 5$$

$$5y - 1 = -5 \text{ and } 5y - 1 = 5$$

$$5y = -4$$

$$5y = 6$$

$$y = -4/5$$

$$y = 6/5$$

$$y = -4/5, 6/5$$

great OR

less th AND

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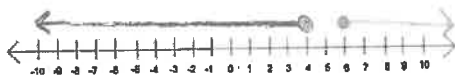
Review (Sections R.2, R.3, 1.1, 1.2, 1.7, 1.8)

Solve the inequality. Then graph the solution.

1).  $|x - 5| \geq 1$

$x - 5 \geq 1$  or  $x - 5 \leq -1$

$x \geq 6$  or  $x = 4$



2).  $|5 - 2x| > 7$

$5 - 2x > 7$  or  $5 - 2x < -7$

$-2x > 2$

$-2x < -12$

$x < -1$  or  $x > 6$



3).  $|3v + 5| > 14$

$3v + 5 > 14$  or  $3v + 5 < -14$

$3v > 9$

$3v < -19$

$v > 3$  or  $v < -19/3$



4).  $|4t - 3| \leq 7$

$4t - 3 \leq 7$  and  $4t - 3 \geq -7$

$4t \leq 10$

$4t \geq -4$

$t \leq 10/4$

$t \geq -1$

$t \leq 5/2$

$-1 \leq t \leq 5/2$



Chapter 2: Linear Equations and Functions

Find the slope of the line passing through the given points.

1).  $(-2, -1), (4, 3)$

$m = \frac{3 - (-1)}{4 - (-2)}$

$= \frac{4}{6}$

$= \frac{2}{3}$

2).  $(1, -5), (1, 2)$

$m = \frac{2 - (-5)}{1 - 1}$

$= \text{undefined}$

vertical line

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Review (Sections R.2, R.3, 1.1, 1.2, 1.7, 1.8)

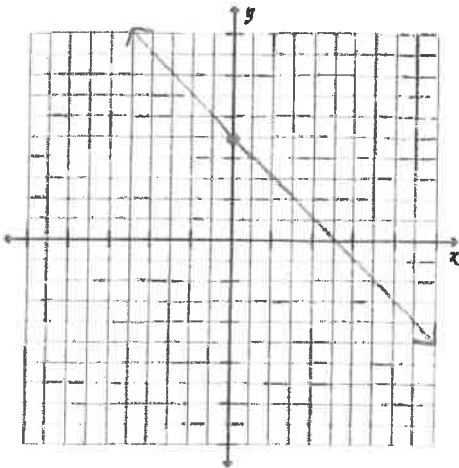
3). (5, -3), (1, 2)

$$m = \frac{2 - (-3)}{1 - 5}$$

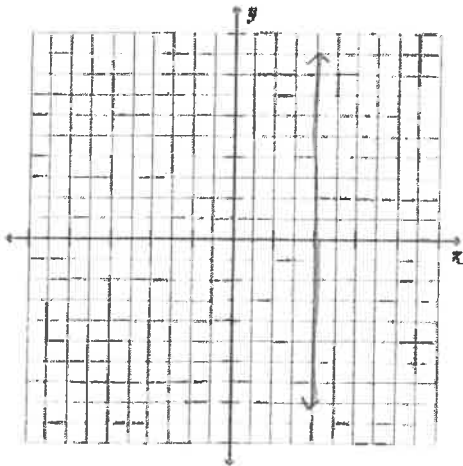
$$= \frac{5}{-4}$$

Graph the equation.

1).  $y = 5 - x$



3).  $x = 4$



4). (6, 2), (-8, 2)

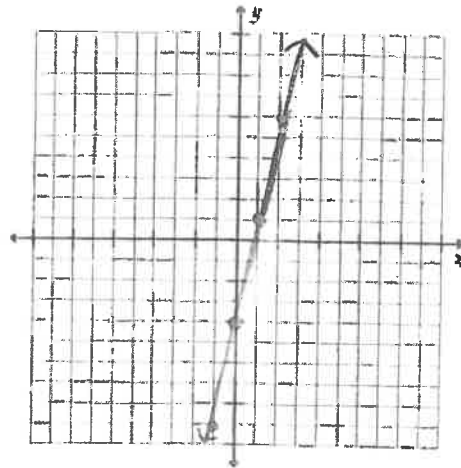
$$m = \frac{2 - 2}{-8 - 6}$$

$$= 0$$

\* horizontal line

2).  $y - 5x = -4$

$$y = 5x - 4$$

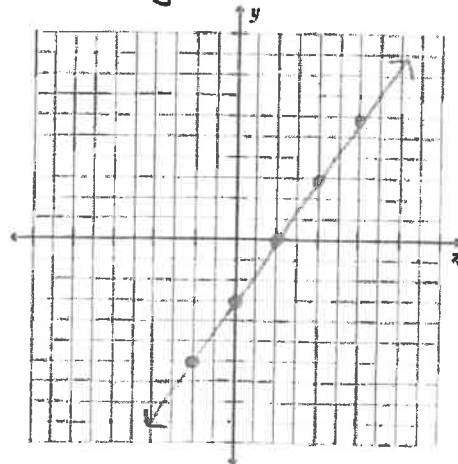


4).  $6x - 4y = 12$

$$-4y = -6x + 12$$

$$y = \frac{6}{4}x - 3$$

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



Equations of a Line

- Slope-Intercept Form

$$y = mx + b$$

- Point-Slope Form

$$y - y_1 = m(x - x_1)$$

- Standard Form

$$Ax + By = C$$

1. Write an equation for a line that goes through (3, 5) and has slope  $m = 2$  in slope intercept form.

$$5 = 2(3) + b$$

$$5 = 6 + b$$

$$-1 = b$$

$$y = 2x - 1$$

2. Write an equation for a line that goes through (2, -3) and (1, 1) in standard form.

$$m = \frac{1 - (-3)}{1 - 2}$$

$$= \frac{4}{-1}$$

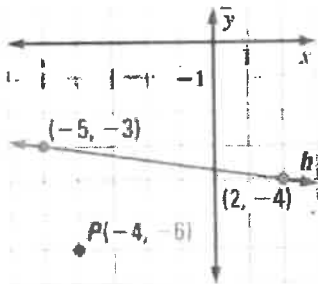
$$= -4$$

$$y - 1 = -4(x - 1)$$

$$y - 1 = -4x + 4$$

$$4x + y = 5$$

3. Write an equation for the line in the coordinate plane below



$$m = -1/7$$

$$y + 4 = -1/7(x - 2)$$

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Review (Sections R.2, R.3, 1.1, 1.2, 1.7, 1.8)

4. Write an equation for the line that has x-intercept = 2 and y-intercept = -1 in all three forms.

$$(2, 0)$$

$$(0, -1)$$

$$m = \frac{-1 - 0}{0 - 2}$$
$$= \frac{-1}{-2}$$
$$= \frac{1}{2}$$

$$y - 0 = \frac{1}{2}(x - 2)$$

$$y = \frac{1}{2}(x - 2)$$

$$y = \frac{1}{2}x - 1$$

$$y - \frac{1}{2}x = -1$$

$$x - 2y = 2$$

Write the equation of the line that passes through the given points.

1).  $(-3, 4), (2, -6)$

2).  $(-4, 1), (3, -6)$

$$m = \frac{-6 - 4}{2 - (-3)}$$
$$= \frac{-10}{5}$$
$$= -2$$

$$y - 4 = -2(x + 3)$$

$$y - 4 = -2x - 6$$

$$y = -2x - 2$$

$$2x + y = -2$$

$$m = \frac{-6 - 1}{3 - (-4)}$$
$$= \frac{-7}{7}$$
$$= -1$$

$$y - 1 = -1(x + 4)$$

$$y - 1 = -x - 4$$

$$y = -x - 3$$

$$x + y = -3$$

