

Intermediate Algebra
Review for Test 1
Luczak

1. Solve the following inequalities. Express the solution set in interval notation and graph it.
 - a) $\frac{2x-3}{4} > 6$
 - b) $-1 \leq 3-2x < 11$
 - c) $\left|1 - \frac{x}{5}\right| > \frac{9}{5}$
 - d) $\left|1 - \frac{1}{6}x\right| < \frac{1}{2}$
2. Solve the absolute value equations.
 - a) $|x-6| = |3-2x|$
 - b) $|3-2(5-x)| = 3$
 - c) $4-3|x-2| = -8$
3. Plot the following points. Be sure to label them.
 $A = (-1, 0)$ $B = (0, 4)$ $C = (-1, -4)$ $D = (2, -2)$ $E = (3, 1)$
4. Graph the following lines. Label the lines.
 $l_1: x = 2$ $l_2: y = -1$ $l_3: y = 3x - 2$ $l_4: 5x - 4y = 3$
5. The equation of a line is $2x - 5y = 13$ find the following:
 - a. the x intercept
 - b. the y intercept
 - c. the slope of the line
 - d. the equation of the line parallel to the line that passes through $(-1, 3)$. Leave your answer in slope intercept form.
 - e. the equation of the line perpendicular to the line that passes through $(-1, 3)$. Leave your answer in slope intercept form.
 - f. Graph the line.
6. Write the equation of the line given the following information. Leave answers in slope intercept form as well as standard form when possible.
 - a. passes through the points $(3, 2)$ and $(-2, 8)$
 - b) $m = \frac{1}{2}$ and passes through $(3, -1)$
 - c) the slope is undefined and it passes through $(3, -2)$
 - d) $m = 0$ and it passes through $(3, -2)$
 - e) $m = -\frac{5}{4}$ and it passes through $\left(\frac{1}{3}, \frac{2}{5}\right)$
7. Write the following linear equations in slope intercept form, and indicate the slope and y intercept of each:
 - a) $-2x + 6y = 1$
 - b) $2x - 5y + 2 = 4y - 6x - 3$

Solve the following systems of equations by the method of your choice. If there is a unique solution give it as an ordered pair. If there are infinitely many solutions or no solutions state that.

8. $3x - 5y = 15$
 $x - \frac{5}{3}y = 5$

9. $4x + y = 7$
 $6x - 2y = 8$

10. $x - 3y = -2$
 $-2x + 6y = 13$

11. $3x + 4y = 1$
 $2x - 3y = 12$

12. $x + 2y + 3z = 4$
 $2x - y + z = 5$
 $3x + y + 4z = 6$

13. $x + 3y + 2z = 2$
 $x - 3y - 2z = -1$
 $2x + 9y - 8z = 2$

14. Find the solution set graphically. Be sure to clearly mark the solution set.

a) $x + y \geq 2$
 $2x - y \leq 3$
 $x \geq 0$
 $y \geq 0$

b) $y \geq \frac{2}{3}x + 5$
 $y \leq \frac{3}{2}x + 3$

c) $2x + y \leq 10$
 $x + 2y \leq 8$

12. A chemist has one 40% and one 70% solution of acid in stock. How much of each should be used to get 100 grams of a 49% solution. Set up a system of equations and find the solution.

13. A collection of nickels, dimes, and quarters consists of 15 coins with a total value of \$1.10. If the number of nickels is one less than 4 times the number of dimes, how many of each coin are contained in the collection?