

## Math 110 Review Answers

Here are answers to some of the review problems (note that some are incomplete).

Note: Don't assume these answers are 100% correct.

*Linear equations and inequalities, one variable:*

1. Solve each equation.

(a) Solution set:  $\mathbb{R}$

(c) Solution set:  $\left\{\frac{15}{18}\right\}$

(b) Solution set:  $\emptyset$

(d) Solution set:  $\left\{-\frac{28}{5}\right\}$

2. Solve for  $x$ .

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

(b)  $x = \frac{5-c}{5}$  or  $x = 1 - \frac{c}{5}$

3. Solve each inequality. Give the solution set both graphically and using interval notation.

(a) Solution set:  $(-\infty, \frac{11}{2})$

(d) Solution set:  $\left[-\frac{17}{2}, \frac{13}{2}\right)$

(b) Solution set:  $[48, \infty)$

(e) Solution set:  $\emptyset$

(c) Solution set:  $(-\infty, \infty)$

(f) Solution set:  $(-\infty, 1) \cup (10, \infty)$

*Word Problems:* Solve each word problem. You may use either one variable and one equation, or two variables and two equations to set up the problem.

(a) 15 pounds

(b) 2 meters and 1.5 meters

(c) 17.5 and -12.5

(d) 15 miles

*Linear equations in two variables*

4. Write the equation of each line in (i) slope-intercept form and (ii) standard form with integral coefficients.

(a)  $7x - 3y = 21$

(d)  $x + y = 3$

(b)  $2x + 3y = 0$

(e)  $x = 2$

(c)  $x - 3y = 9$

(f)  $4x + 7y = 30$

5. Graph each equation.

(a)  $5x - 3y = 7$

(c)  $7x = 21$

(b)  $y - 3 = 10$

(d)  $4x + 5y = 10$

6. Graph the solution set to each linear inequality.

(a)  $y > 3x - 2$

(d)  $3y > 9$  and  $y - x \leq 5$

(b)  $y \leq 2x + 3$

(e)  $3x + 2y \geq 8$  or  $3x - 2y < 6$

(c)  $-5x > 3$

(f)  $1 \leq x < 3$  and  $2 < y \leq 5$

7. Set  $f(x) = -x + 1$  and  $g(x) = -x^2 + x - 6$ . Compute each of the following.

(a) 1

(c) 4

(e)  $-\frac{23}{4}$

(b) -6

(d) -18

(f)  $-\frac{27}{4}$

8. Domain:  $[-5, \infty)$  Range:  $[0, \infty)$ .

9. Solve each system of equations by graphing. State the solution set, and say whether each system is dependent, independent, or inconsistent.

(a) Solution set:  $\{(x, y) \mid x + 2y = 4\}$

(b) Solution set:  $\emptyset$

10. Solve each system of equations algebraically, using either the addition method, the substitution method, or Gauss-Jordan elimination. State the solution set, and say whether the system is dependent, independent, or inconsistent.

(a) Solution set:  $\{(-3, -2)\}$

(d) Solution set:  $\{(x, y) \mid 3x - 2y = 12\}$

(b) Solution set:  $\{(-3, -6)\}$

(e) Solution set:  $\emptyset$

(c) Solution set:  $\{(-1, 5)\}$

(f) Solution set:  $\{2, -\frac{1}{3}\}$