

Algebra Workshop

Name: _____

Homework 2

1. Solve the following equations:

(a) $x^2 = 25$

(b) $2x^2 = 8$

(c) $x^2 - 5 = 4$

(d) $x^2 + 4 = 20$

(e) $3x^2 - 1 = 2$

(f) $\frac{x^2 - 1}{2} = 12$

2. Solve the following equations:

(a) $\sqrt{x} = 2$

(b) $\sqrt{x-3} = 5$

(c) $\sqrt{x} + 1 = 5$

(d) $\sqrt{3x+1} = 4$

(e) $\frac{\sqrt{2x+4}}{3} + 1 = 2$

(f) $5 - \sqrt{x} = 3$

3. Simplify the following expressions:

(a) $4xy + 3y^2 + 4y - y^2 + 6xy$

(b) $2x + 3y^2 - 5y(x + 2y)$

4. Solve the following equation for y :

$$2(3x + 5y) = 3(x - y + 3)$$

5. Solve the following equation for y :

$$\sqrt{x + y} = 5$$

6. Find all solutions to the following system of equations.

$$\begin{aligned}x + y &= 5 \\3x - 2y &= 5\end{aligned}$$

7. Find all solutions to the following system of equations.

$$\begin{aligned}4x - y &= 7 \\5x - 2y &= 5\end{aligned}$$

8. A university has 80 professors in biology, chemistry, and physics. There are twice as many biology professors as physics professors, and there are 12 more chemistry professors than physics professors. Determine the number of biology professors.

9. Laura has a bag containing \$40.75 in pennies, nickels, dimes, and quarters. There are three times as many pennies as quarters; there are twice as many dimes as quarters; and there are 20 more nickels than quarters. Determine how many pennies, nickels, dimes, and quarters are in the bag.