

Section 1: Simplifying Algebraic Expressions**Simplify the expression.**

1) $5a + 6b + 7a$

2) $(4p - 7q) - (5q - 8p)$

3) $5x^2 + 3x - 2 - 4x^2 + 5x - 4$

4) $4(2x^2 + y) + 5(x^2 - 3y)$

Section 2: Evaluating Algebraic Expressions**Evaluate the expression for the given value of the variable.**

5) $x + 2x - x - 1; x = 2$

6) $5c^3 - 6c^2; c = -5$

7) $4a + 7b - 3 + 6b; a = 2, b = 5$

8) $\frac{3k+2(k-4)}{k+8}; k = -3$

Section 3: Solving Linear Equations**Solve the equation. Check your solution.**

9) $5c - 9 = 8 - 2c$

10) $5(2 - a) = 0$

11) $6(n - 4) = 3n$

12) $4x - 8 = 2(x - 5)$

13) $\frac{3}{4}x - 1 = 5$

14) $\frac{x}{6} = \frac{9}{2}$

15) $-3(a + 4) - 4a = -5$

16) $3(n - 6) = -18 - 4n$

Section 4: Writing and Graphing Linear Equations

Slope Formula: $m = \frac{y_2 - y_1}{x_2 - x_1}$

Slope-Intercept Form of Line: $y = mx + b$

Point-Slope Form of a Line: $y - y_1 = m(x - x_1)$

Write the slope-intercept form of the equation of each line given the slope and y-intercept.

17) Slope = 2, y-intercept = -2

18) Slope = $-\frac{3}{5}$, y-intercept = 2

Write the slope-intercept form of the equation of the line that passes through the given point with the given slope.

19) Through: (-3, 5), slope = -1

20) Through: (5, 0), slope = $-\frac{3}{5}$

Write the slope-intercept form of the equation of the line that passes through the given points.

21) Through: (-4, -2) and (3, -1)

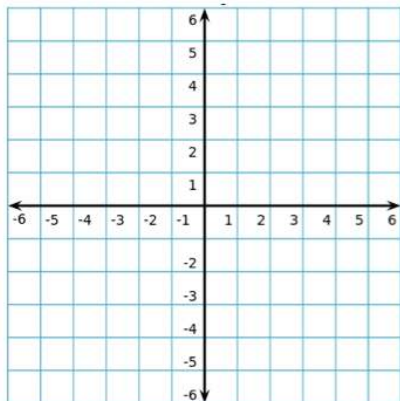
22) Through: (0, -2) and (4, 4)

23) Write the equation of the line parallel to $y = 3x + 2$ that passes through (-1, -2).

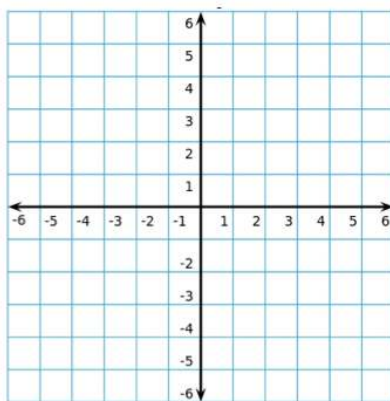
24) Write the equation of a line perpendicular to $y = \frac{1}{4}x - 5$ that passes through (1, 1).

Graph the equation.

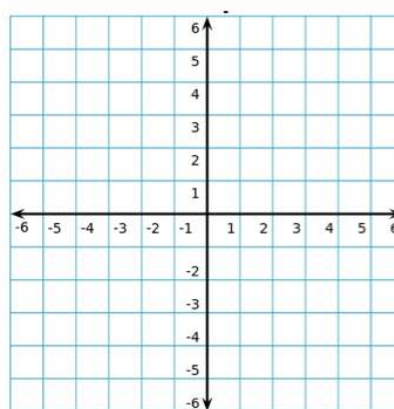
25) $y = \frac{5}{4}x + 4$



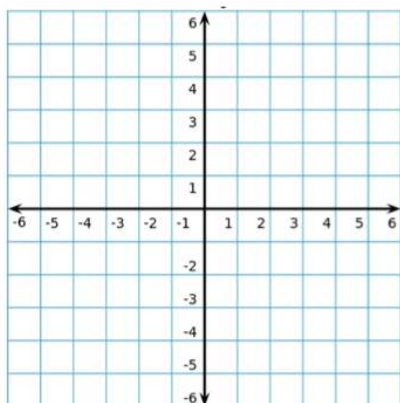
26) $y = -\frac{2}{3}x + 2$



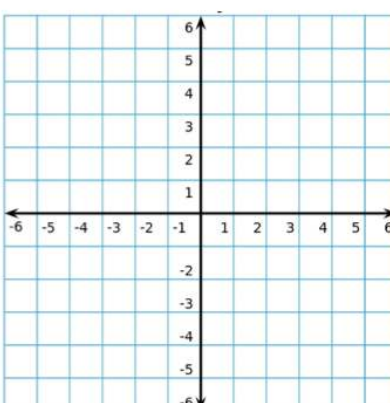
27) $y = -4$



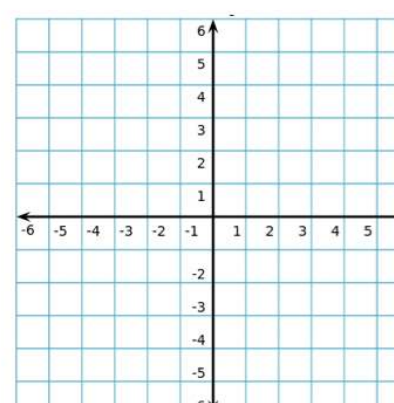
28) $x = 3$



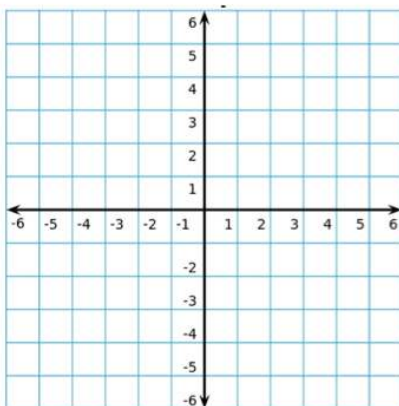
29) $5x - y = 5$



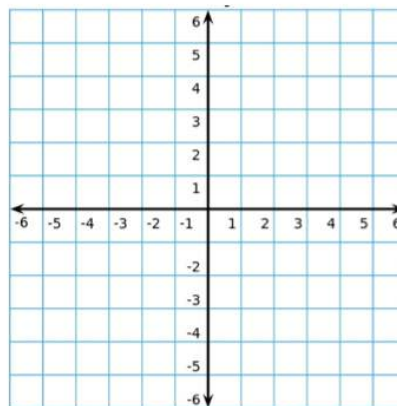
30) $12 - 3y = -4x$



31.) $y = 3x - 1$
 $x + y = 4$



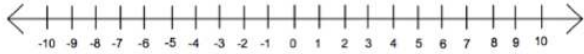
32.) $y = \frac{3}{2}x$
 $3x - 2y = 6$



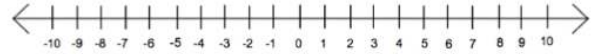
Section 5: Solving and Graphing Inequalities

Solve each inequality and graph its solution.

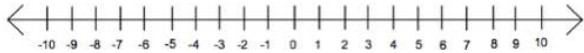
33) $a + 8 < 5$



34) $20v \leq 110$



35) $-11 > n - 8$



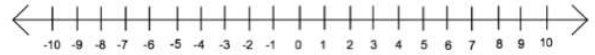
36) $-8(r + 3) < -88$



37) $x - 20 \geq -11$



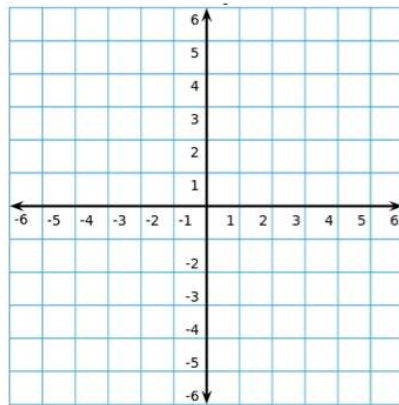
38) $-13m < 39$



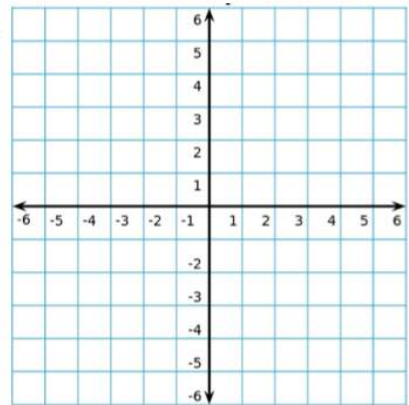
Section 6: Graphing Linear Inequalities

Graph each linear inequality.

39) $y \geq -x - 2$



40) $y < \frac{2}{3}x + 1$



Section 7: Solving Linear Systems

Solve the following systems of equations by substitution.

$$41) \begin{cases} x + y = 7 \\ x = y + 9 \end{cases}$$

$$42) \begin{cases} y = 2x + 32 \\ 2x + y = 60 \end{cases}$$

Solve the following systems of equations by elimination.

$$43) \begin{cases} x + 2y = 3 \\ 8x - 2y = 8 \end{cases}$$

$$44) \begin{cases} -3x + 2y = 14 \\ 2x - 2y = -6 \end{cases}$$

Section 8: Multiplying Polynomial Expressions

Use the FOIL method to multiply the following binomials.

$$45) (2x + 3)(x + 1)$$

$$46) (3x - 2)^2$$

$$47) (x - 4)(x + 3)$$

Section 9: Factoring Polynomial Expressions

Factor out the Greatest Common Factor.

$$48) 10x^2y^2 + 15xy^3 - 5xy^2$$

$$49) -6rs - 12r^2s + 9rt$$

Factor by Difference of Squares. If the expression is not factorable, write "N.F."

50) $x^2 - 81$

51) $4t^2 - 25$

52) $z^2 + 36$

53) $x^2 - 49$

Factor each trinomial into two binomials. (Remember to check for GCF.)

54) $x^2 - 12x + 32$

55) $x^2 + 19x + 90$

56) $x^2 - 4x + 4$

57) $x^2 + x - 12$

58) $2x^2 - 9x - 18$

59) $2x^2 - 6x - 8$

60.) $3x^2 - 11x - 4$

61.) $xy - 3y + 4x - 12$

62.) $x^2 - 2xy + xy - 2y^2$

Section 10: Simplifying Radical Expressions

Simplify the radicals.

63) $\sqrt{25}$

64) $\sqrt{200}$

65) $\sqrt{96}$

66) $-5\sqrt{32}$

67) $\sqrt{80x^2}$

68) $\sqrt{125x^3}$

Simplify the radical expressions.

69) $2\sqrt{3} + 5\sqrt{3}$

70) $6\sqrt{12} - 4\sqrt{3}$

71) $3\sqrt{3} \cdot 4\sqrt{5}$