Whittier Tech

Grade 11:
Algebra III

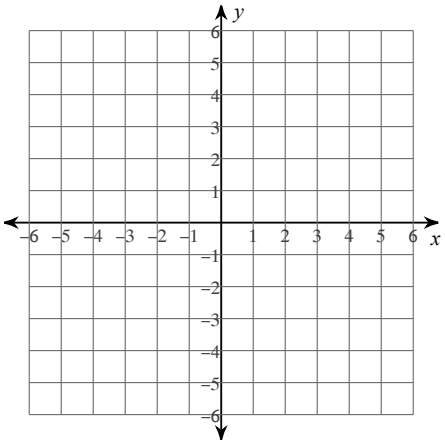
Algebra 3 Name_____

Summer Project

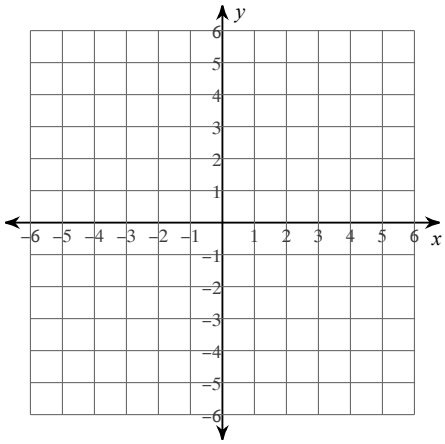
Date_____

Identify the slope and the y-intercept of the line. Sketch the graph of each line.

1) $x - y = -2$



2) $y = -1$



Write the slope-intercept form of the equation of the line with the given information.

3) through: $(-3, 2)$, slope $= \frac{1}{3}$

4) through: $(4, 4)$, parallel to $y = \frac{7}{4}x - 4$

5) through: $(-3, -2)$, perpendicular to $y = \frac{3}{2}x$

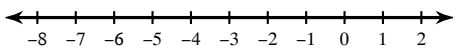
Evaluate each function.

6) $w(n) = n + 3$; Find $w(-5)$

7) $g(a) = 4a - 5$; Find $g(a - 2)$

Solve each inequality and graph its solution.

8) $3 + 7a + 4a < -8$



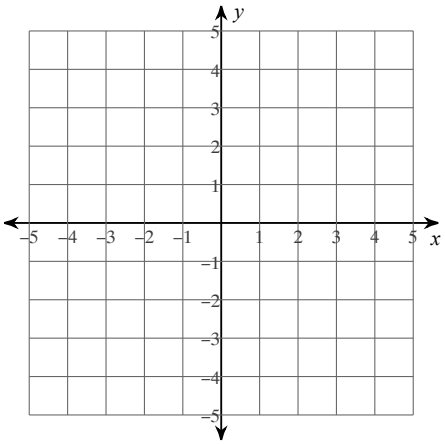
Solve each inequality.

9) $-18 \geq -5n - 4n$

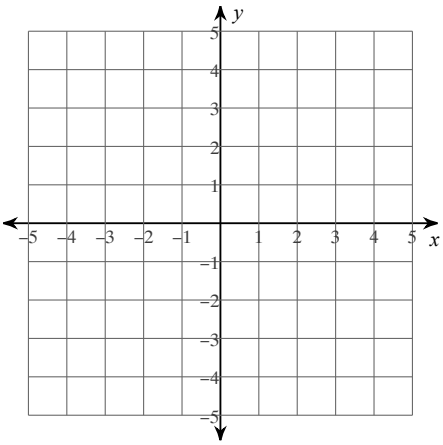
10) $-7n + 4(4n + 8) < -13 - 6n$

Solve each system by graphing. State the solution point (x,y) if it exists, or write no solution, or infinitely many solutions.

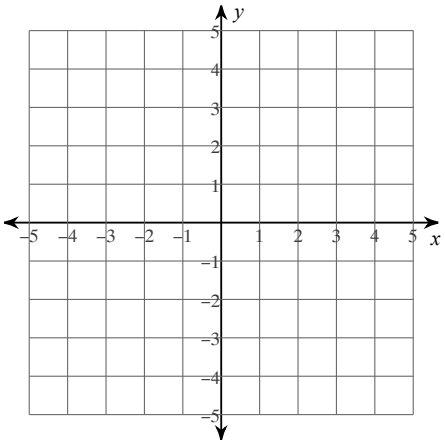
11) $y = -4x + 3$
$y = 2x - 3$



12) $y = -3$
$y = \frac{7}{2}x + 4$



13) $y = -3x - 1$
$y = -3x + 2$



Solve each system by substitution. State the solution point (x,y) if it exists, or write no solution, or infinitely many solutions.

14) $y = 3x - 4$
$y = 4x - 7$

Solve each system by elimination. State the solution point (x,y) if it exists, or write no solution, or infinitely many solutions.

15) $10x - 5y = 0$
$-8x + 5y = 10$

16) $x - 3y = -10$
$-x + 7y = 18$

17) $-3x + 4y = 14$
$x + 4y = -26$

18) $-6x - y = -11$
$7x + 9y = 5$

19) $5x + 3y = -18$
$7x - 2y = 12$

20) $-5x - 10y = -5$
$9x + 9y = 18$

Factor completely (remember to look for a GCF first) then solve the equation.

21) $x^2 + 5x - 24 = 0$

22) $x^2 - 15x + 56 = 0$

23) $x^2 - 25 = 0$

24) $r^2 + 12r + 29 = -3$

25) $3a^2 + 21a + 18 = 0$

26) $5n^2 + 9n - 2 = 0$

Solve each equation by taking square roots.

27) $6m^2 - 3 = 483$

28) $7a^2 - 3 = 333$

Solve each equation with the quadratic formula.

29) $5x^2 + 12x - 108 = 0$

30) $2k^2 + 11k + 4 = 0$

Simplify.

31) $3m^5n^3 \cdot 2mn^3 \cdot m^2$

32) $3n \cdot 5m^2n^2 \cdot 4n^3$

Simplify. Your answer should contain only positive exponents.

33) $x^4 \cdot \left(yx^2\right)^3$

34) $\left(x^2y^3\right)^2 \cdot x^3y^{-1} \cdot 2y$

35) $\dfrac{2yx^{-3}}{2y}$

36) $\dfrac{u^4v^2}{u^3v^4}$

37) $\left(\dfrac{x^{-2}y^{-1}}{yx^4 \cdot 2xy^{-1}}\right)^4$

38) $\dfrac{2mn^3 \cdot \left(m^{-1}\right)^{-4}}{mn^{-2}}$

39) $\dfrac{4x^0 \cdot 4x^4y^{-1}}{3y^3}$

40) $\dfrac{2x^{-3}y^3}{2x^4y^3 \cdot 3yx^{-1}}$

Simplify each expression.

41) $\left(7 + 5m + m^3\right) + \left(m^3 - 6m + 4\right) + \left(m - 3m^3\right)$

42) $\left(6x^4 + 8x + x^3\right) - \left(x - 4x^2 - 4x^4 + 5x^3\right)$

43) $\left(4x^2 + 4x - 4x^3\right) - \left(8x - x^2 + 4x^3\right) + \left(x + 8x^3 - 6x^2\right)$

Find each product.

44) $-5n^2(-6n^2 - 7n + 2)$

45) $(2n + 3)(4n + 2)$

46) $(4v - 2)(2v + 3)$

47) $(4x - y)(6x - 2y)$

48) $(8x + 1)(6x^2 + 6x + 1)$

49) $(8x + 2)(8x - 2)$

50) $(6n - 3)^2$

Simplify.

51) $\sqrt{128}$

52) $\sqrt{63}$

53) $\sqrt{96}$

54) $\sqrt{12x^3}$

55) $-\sqrt{3} + 3\sqrt{54} - 2\sqrt{27}$

56) $2\sqrt[3]{40} - 3\sqrt[3]{81} - 3\sqrt[3]{40}$

57) $\sqrt{6}\left(-4\sqrt{2} + 2\right)$

58) $\left(3\sqrt{2} + 4\sqrt{5}\right)\left(\sqrt{2} + \sqrt{5}\right)$

59) $\dfrac{3\sqrt{20}}{\sqrt{15}}$

60) $\dfrac{2 - 4\sqrt{2}}{5\sqrt{7}}$