

Incoming Juniors 2019

Date _____ Period _____

Solve each equation.

1) $|n + 7| = 5$

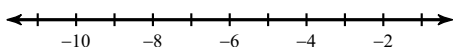
2) $|-5 + n| - 2 = -1$

3) $-7|1 - 4a| - 9 = -114$

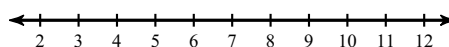
4) $|8 - 6x| - 1 = 21$

Solve each inequality and graph its solution.

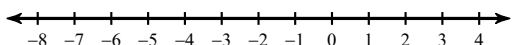
5) $2(4 - 6r) \geq 92$



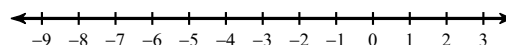
6) $2(1 + 8n) > 82$

**Solve each compound inequality and graph its solution.**

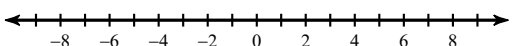
7) $2 + 9v \geq -7$ or $9 - 7v > 44$



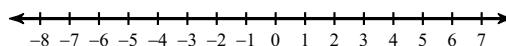
8) $2 + 5v < -18$ or $-8v + 10 < 34$

**Solve each inequality and graph its solution.**

9) $|9n - 5| < 68$



10) $|-10n + 5| \leq 55$



- 11) Juliana received a 100, 95 and 87 on her first three exams. What score range can she receive and maintain an A average (93 or better) on her exams.

Simplify.

12) $\sqrt[4]{96x^6y^8}$

13) $\sqrt[3]{24a^3b^2}$

14) $\sqrt{64x^2y^3}$

15) $\sqrt[3]{-81a^7b^3}$

16) $\sqrt{150a^3b}$

17) $\sqrt[5]{160a^6b}$

18) $\frac{2\sqrt{3}}{3\sqrt{27}}$

19) $\frac{4\sqrt{4n^3}}{3\sqrt{5n}}$

20) $-3\sqrt{45} + 3\sqrt{5}$

21) $2\sqrt{8} + 3\sqrt{18}$

22) $-4\sqrt{6}(5\sqrt{10} - \sqrt{2})$

23) $(-2 + \sqrt{3})(-2 + 5\sqrt{3})$

24) $\frac{4 - 2\sqrt{2}}{5 - \sqrt{3}}$

25) $\frac{2 + 2\sqrt{2}}{2 + \sqrt{2}}$

Solve each equation. Remember to check for extraneous solutions.

26) $\sqrt{10p + 36} = 6$

27) $\sqrt{x - 5} = \sqrt{2x - 15}$

$$28) 16 = \sqrt{3 - 11n} + 10$$

$$29) -4 = -5 + \sqrt{\frac{x}{7}}$$

Evaluate

$$30) i^{188}$$

$$31) i^{279}$$

Simplify.

$$32) -12 + 3i - (-7 + 6i)$$

$$33) (6 - 3i)(-4 - 5i)$$

$$34) \frac{6}{3 + 2i}$$

$$35) \frac{-7 + 9i}{2 - 7i}$$

Factor each completely.

$$36) 80u^2 - 5v^2$$

$$37) 9u^2 - 16v^2$$

$$38) 5n^2 + 16n + 3$$

$$39) 6v^2 - 17v + 12$$

Solve each equation by factoring.

$$40) v^2 - 4v = -v + 10$$

$$41) 5n^2 + 3n - 7 = -7 + 4n^2$$

Solve each equation with the quadratic formula.

$$42) 6x^2 - 4x = 112$$

$$43) 3k^2 = 3 - 2k$$

Solve for x.

- 44) The length of a rectangle is equal to 2 times the width plus 3 feet. If the area of the rectangle is 20 square feet, what are the dimension of the rectangle?

Simplify. Your answer should contain only positive exponents.

45) $3^{-8} \cdot 3^{-3}$

46) $2u^2v^5 \cdot 2u^6v^5$

47) $\frac{3h^2j^0k^4 \cdot 5kj^2}{3h^3j^4k^0}$

48) $\frac{(m^{-4}n^3p^{-6})^3}{n^4p^4 \cdot m^{-1}p^6}$

Divide.

49) $(12n^3 + 4n^2 + n) \div 4n^2$

50) $(2n^3 + 30n^2 + 5n) \div 10n^3$

51) $(m^3 + 10m^2 + 14m - 4) \div (m + 2)$

52) $(x^3 - 14x^2 + 37x + 30) \div (x - 10)$

Simplify each expression.

53) $\frac{10n^2 - 40n}{35n^2 - 10n}$

54) $\frac{5p^2 + 19p - 4}{7p^3 + 28p^2}$

55) $\frac{6v}{6v - 6} \cdot \frac{4v^2 + 12v - 16}{2v + 8}$

56) $\frac{6}{6x + 54} \div \frac{1}{2x}$

57) $\frac{x-9}{2x^2+18x} \cdot \frac{10x^2+12x}{5x+6}$

58) $\frac{4}{3v^2} - \frac{2}{6}$

59) $\frac{5}{6b} + \frac{3}{4a^2}$

Solve each equation. Remember to check for extraneous solutions.

60) $\frac{1}{v^2} + \frac{1}{v} = \frac{5}{v^2}$

61) $\frac{x-5}{x} - \frac{x+2}{x} = 1$

62) $\frac{1}{6p^2} = \frac{2}{3p^2} + \frac{1}{3p}$

63) $\frac{1}{k} + \frac{k+1}{k} = \frac{1}{2}$

Simplify each expression.

64) $\frac{6}{n+4} - \frac{2}{n-4}$

Write the slope-intercept form of the equation of each line.

65) $6 + 2x = 2y$

66) $45 = -9y + 6x$

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

67) through: $(-1, -3)$, slope = -2

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

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

69) through: $(-2, 4)$ and $(-2, -5)$

70) through: $(-5, 0)$ and $(0, 5)$

Write the slope-intercept form of the equation of the line described.

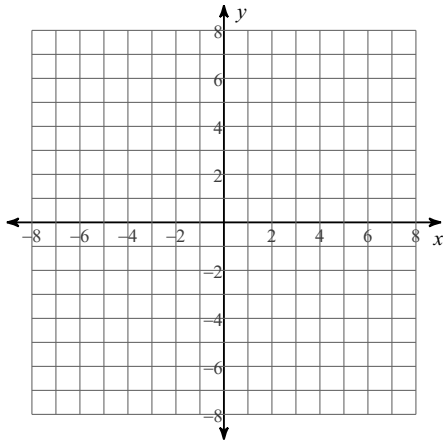
71) through: $(-4, -5)$, parallel to $y = 3x - 5$

72) through: $(2, 4)$, parallel to $y = 3x - 3$

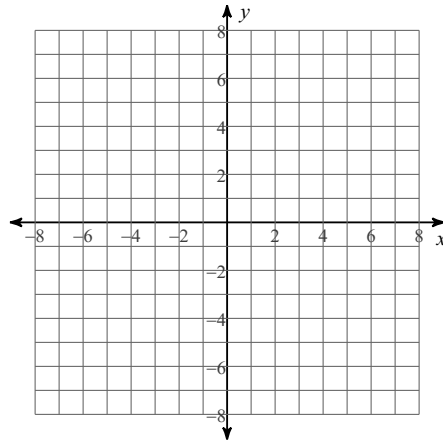
73) You are saving money for a new car. Your parents give you \$2,000 to help your saving get started and you can save \$100 weekly. Write a linear equation that determines your savings (y) for a given amount (x) of weeks saving money. Then, determine how many weeks it will take you to save for a car that costs \$6,200 for a new bike.

Graph the piecewise function

74)
$$\begin{cases} -2x - 3, & x < 0 \\ 2x + 1, & x \geq 0 \end{cases}$$

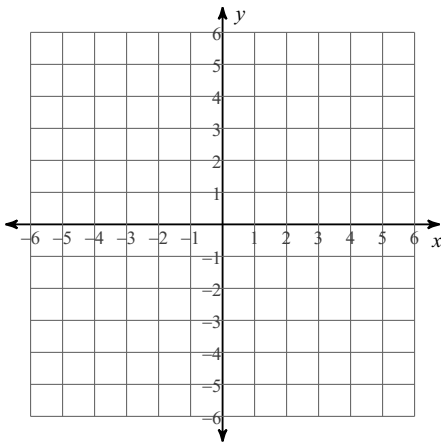


75)
$$\begin{cases} -4x - 1, & x < 0 \\ x - 5, & x \geq 0 \end{cases}$$

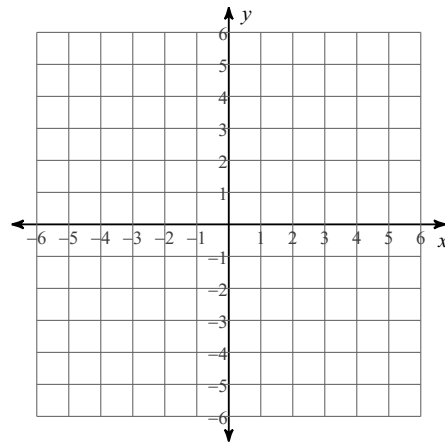


Graph each equation.

76) $y = |2x + 2| + 1$

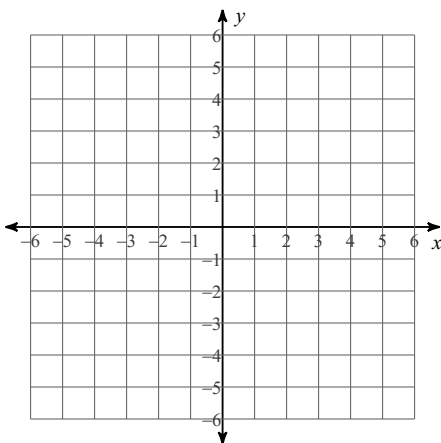


77) $y = -|2x - 3| - 3$

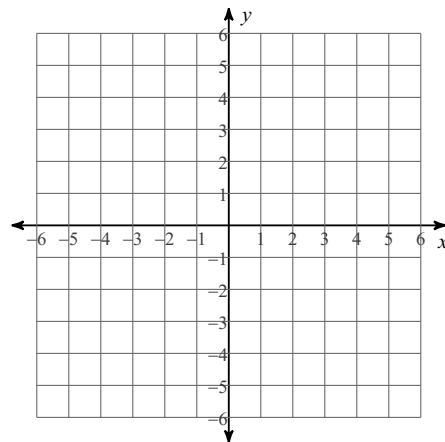


Sketch the graph of each linear inequality.

78) $y \geq \frac{7}{2}x - 4$

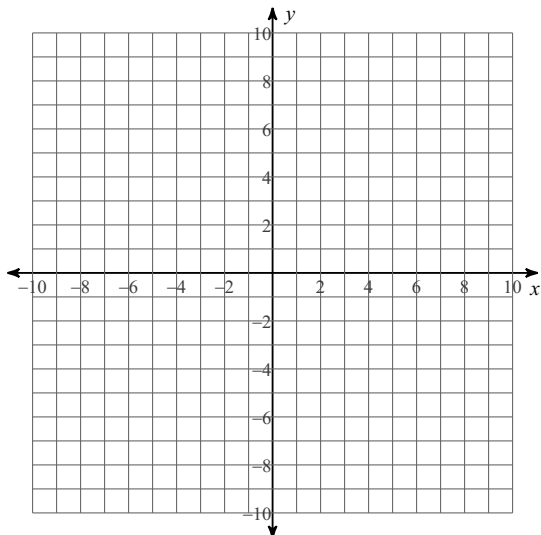


79) $y > -2x + 1$

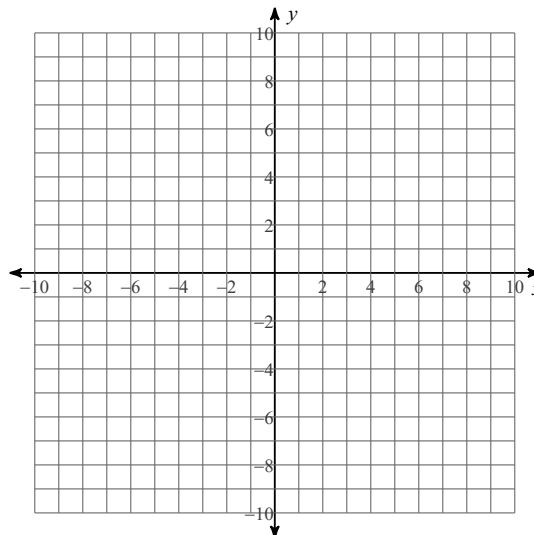


Solve the system of equations by graphing.

80) $y = -\frac{1}{2}x - 1$
 $y = -2x + 8$



81) $y = -\frac{3}{5}x - 1$
 $y = -2x + 6$



Solve each system by elimination.

82) $x - 4y = 11$
 $-x + 4y = -16$

83) $10x - 4y = 0$
 $-7x + 4y = 6$

Solve each system by substitution.

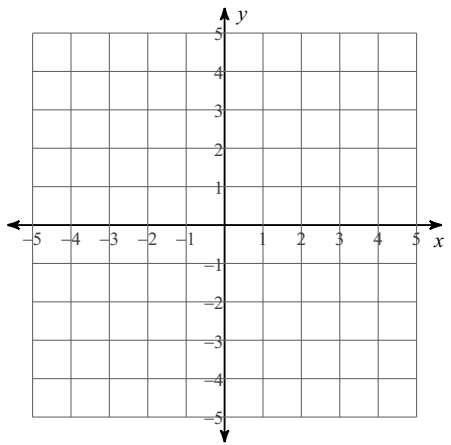
84) $-7x + 2y = -7$
 $x + y = 10$

85) $-3x + 8y = 23$
 $-4x + y = -8$

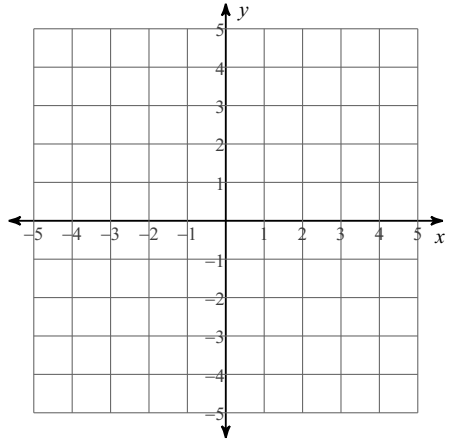
86) Cristo Rey students were selling tamales as part of a school fundraiser. Tamales were \$4 for Queso con rajas and \$5 for Pollo. They ended up raising \$1,000 in ticket sales by selling a total of 230 tamales. Write a system of equations for the situation and determine how many tamales of each kind were sold.

Sketch the solution to each system of inequalities.

87) $y \geq 3x + 3$
 $y > \frac{1}{2}x - 2$

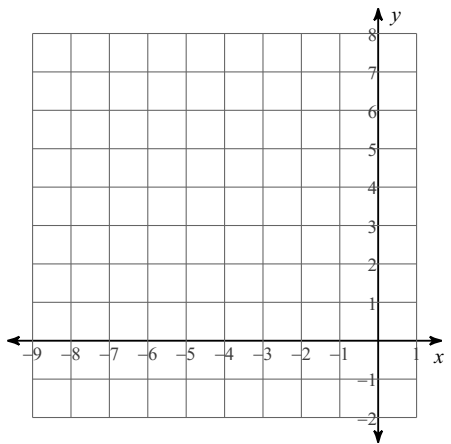


88) $y \leq x - 2$
 $y \leq 6x + 3$

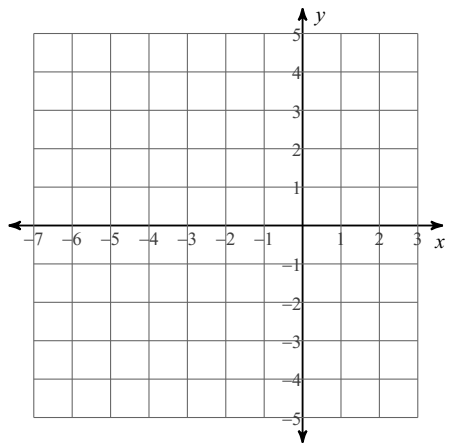


Sketch the graph of each function. Label the x-intercept(s), zeros.

89) $f(x) = 2x^2 + 12x + 17$

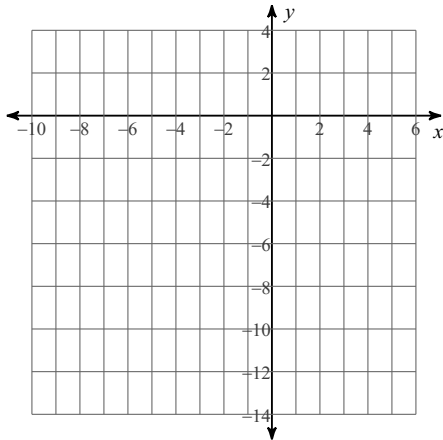


90) $f(x) = -2x^2 - 8x - 4$

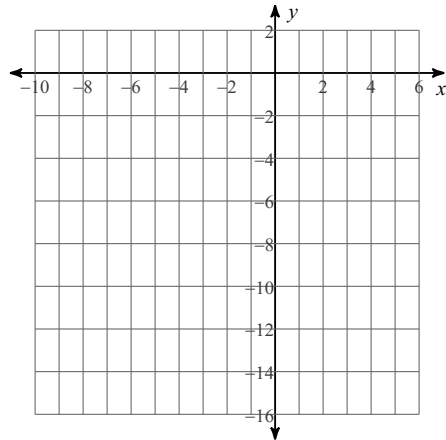


Simplify the function, sketch the graph and label the points of discontinuity (gaps).

$$91) f(x) = \frac{x^2 - 8x - 20}{x + 2}$$



$$92) f(x) = \frac{3x^2 + 5x - 12}{x + 3}$$



Perform the indicated operation.

$$93) \begin{aligned} g(n) &= n - 4 \\ f(n) &= 2n^2 - 5n \\ \text{Find } g(n) + f(n) \end{aligned}$$

$$94) \begin{aligned} f(x) &= 2x + 2 \\ g(x) &= x^2 - 1 \\ \text{Find } f(x) \div g(x) \end{aligned}$$

$$95) \begin{aligned} f(n) &= -n + 3 \\ g(n) &= n^3 + 3n \\ \text{Find } f(n) \cdot g(n) \end{aligned}$$

$$96) \begin{aligned} h(t) &= 2t + 5 \\ g(t) &= -3t \\ \text{Find } h(t) - g(t) \end{aligned}$$

$$97) \begin{aligned} f(x) &= 3x + 1 \\ g(x) &= 2x \\ \text{Find } f(g(x)) \end{aligned}$$

$$98) \begin{aligned} g(t) &= -t^2 - 3 \\ f(t) &= t + 4 \\ \text{Find } g(f(t)) \end{aligned}$$

$$99) \begin{aligned} f(n) &= n - 3 \\ g(n) &= 2n^2 - 3n \\ \text{Find } f(g(-7)) \end{aligned}$$

$$100) \begin{aligned} g(x) &= 2x \\ f(x) &= x^2 + 2x \\ \text{Find } g(f(1)) \end{aligned}$$