

1.1 - Systems of Equations

Solve the following systems algebraically

1. $-10x - 15y = 25$
 $x - 5y = -9$

2. $y = \frac{1}{3}x + 3$
 $y = 2x - 2$

3. $25x - 9y = 3$
 $8x - 3y = 1$

4. $x^2 + 4y^2 = 36$
 $x^2 + y^2 = 12$

Application

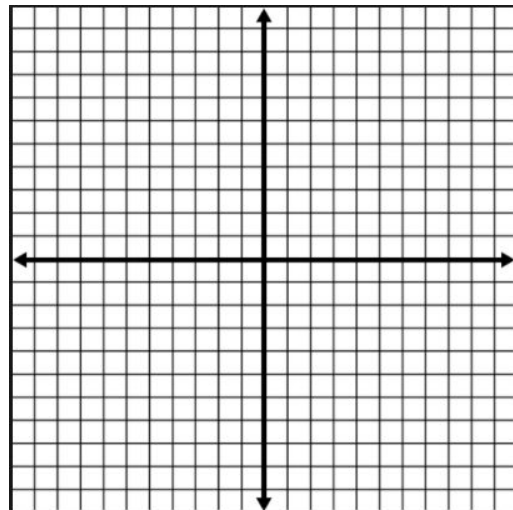
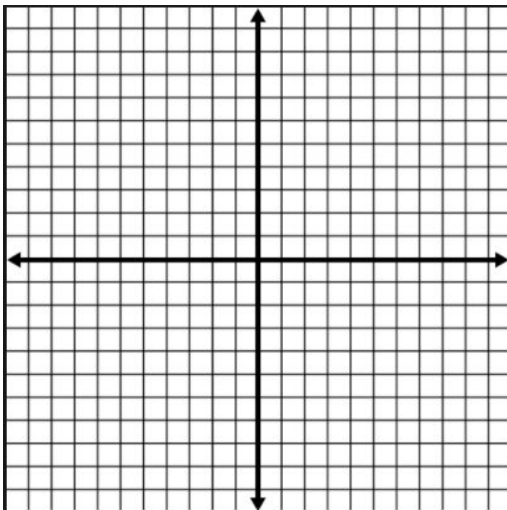
5. Matt and Ming are selling fruit for a school fundraiser. Customers can buy small boxes of oranges and large boxes of oranges. Matt sold 3 small boxes of oranges and 14 large boxes of oranges for a total of \$203. Ming sold 11 small boxes of oranges and 11 large boxes of oranges for a total of \$220. Find the cost of one small box and one large box of oranges.

6. The senior classes at RHS and WFHS planned separate trips to New York City. The senior class at RHS rented and filled 1 van and 6 buses with 372 students. WFHS rented and filled 4 vans and 12 buses with 780 students. Each van and each bus carried the same number of students. How many students can a van carry? How many students can a bus carry?

Solve using graphing calculator. Sketch the graph and record the solution.

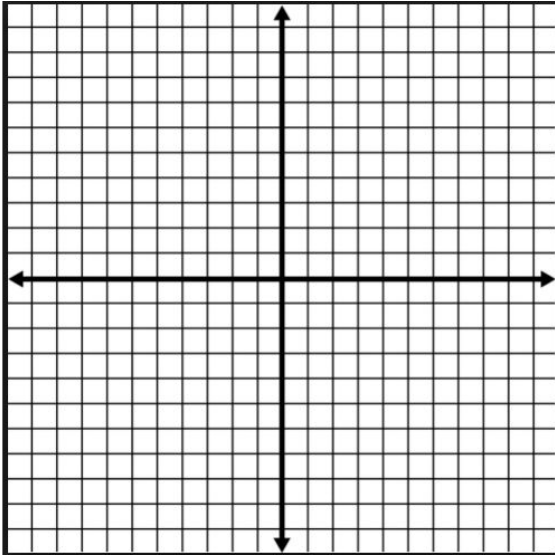
7. $f(x) = -|x + 3| + 6$
 $f(x) = |x - 4| + 4$

8. $3y + 12 = 2x$
 $-2y = (x - 5)^2 - 4$

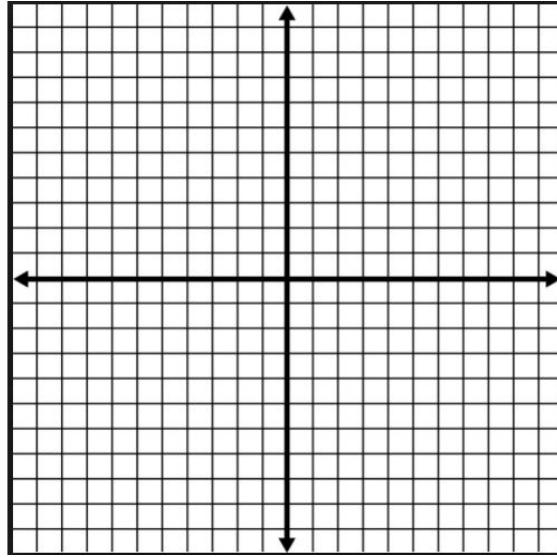


1.2 - Systems of Inequalities

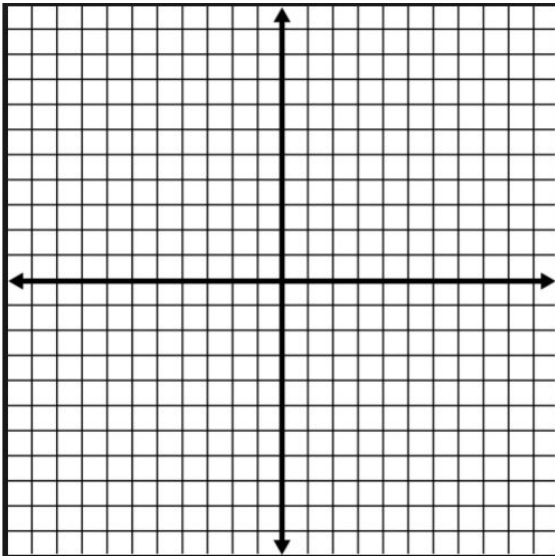
1. $y + 6 \leq 3x$
 $4x > y + 2$



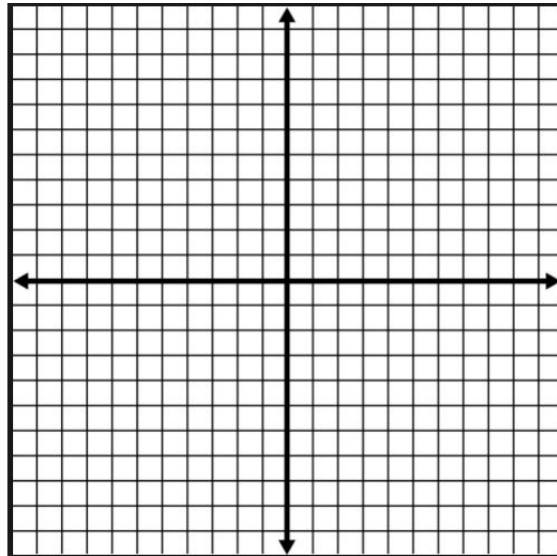
2. $x + y > 2$
 $2x < y + 1$



3. $x - 2y < 6$
 $2y + 3x \leq 10$



4. $x^2 + 3 > y$
 $y < 2x + 1$



5. Jonah is going to the store to buy candles. Small candles cost \$3.50 and large candles cost \$5.00. He needs to buy at least 20 candles, and he cannot spend more than \$80. Write a system of linear inequalities that represent the situation.

6. During a family trip, you share the driving with your dad. At most, you are allowed to drive for three hours. While driving, your maximum speed is 55 miles per hour. Write a system of inequalities describing the possible numbers of hours t and distance d you may have to drive. Is it possible for you to have driven 160 miles?

1.3 - Absolute Value

Solve the Equation

1. $|-2b| = 6$

2. $|-6x| - 10 = -64$

3. $|-3 + 6x| + 10 = 31$

4. $6 - 3|4r - 9| = 3$

Solve each Inequality

5. $|7x| \geq 56$

6. $-2|4x - 3| \geq 6$

7. $5 + |2v - 4| > 29$

8. $-3\left|\frac{1}{2}x + 2\right| + 6 < -20$

Solve each compound Inequality

9. $5v - 6 < -36$ or $9 + 2v > 15$

10. $68 < 5 - 9n \leq 77$

1.4 - Graphing Inverses

Find the domain and range of the given function. Then, find the inverse of the function and state its domain and range. Finally, graph the function and its inverse to determine if the inverse is a function.

1. $h(x) = -2x + 5$

2.

Domain: _____

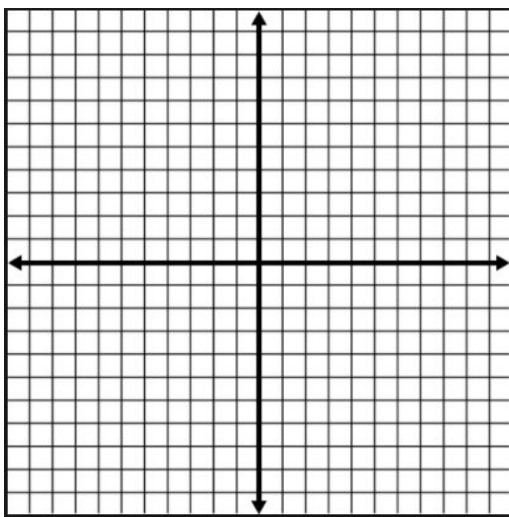
Range: _____

$f^{-1}(x) =$ _____

Function/Not Function

Domain: _____

Range: _____



2. $f(x) = -\sqrt[5]{x} - 3$

Domain: _____

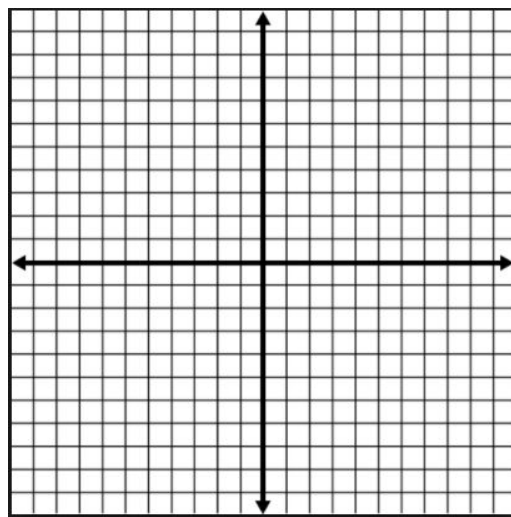
Range: _____

$f^{-1}(x) =$ _____

Function/Not Function

Domain: _____

Range: _____



3. $f(x) = 2(x - 4)^2 - 5$

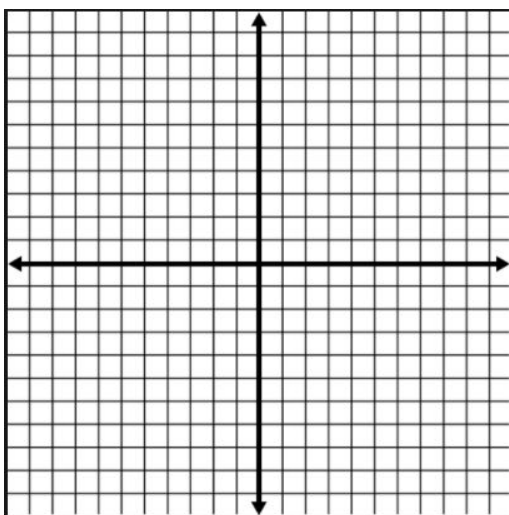
Domain: _____

Range: _____

$f^{-1}(x) =$ _____

Domain: _____

Range: _____



4. $g(x) = \frac{-3x - 10}{5}$

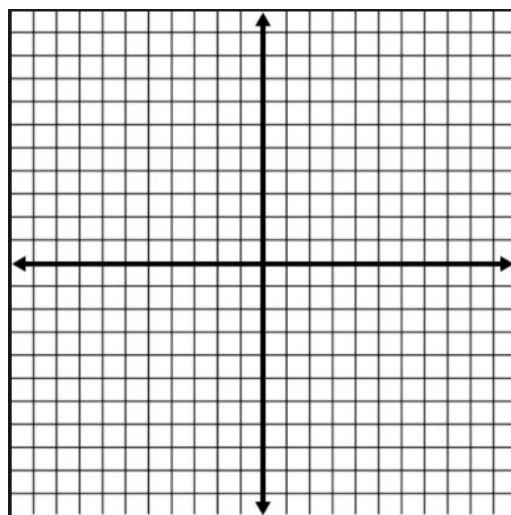
Domain: _____

Range: _____

$f^{-1}(x) =$ _____

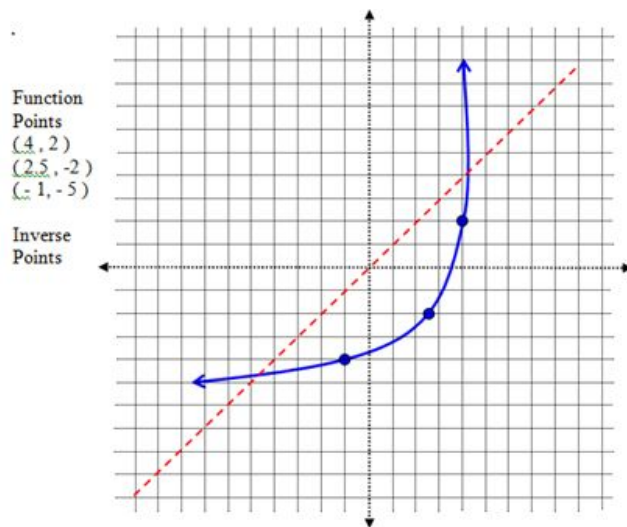
Domain: _____

Range: _____



1.5 - Finding Inverses

Graph the inverse of the function shown below. Then, list the inverse coordinates of the given points.



Determine the inverse of each function.

1. $f = \{(1, -2), (-2, 1), (0, 7)\}$

2. $f = \{(-6, 3), (8, 2), (3, 3)\}$

3. $f(x) = 15x - 1$

4. $y = \sqrt{x-3} + 2$

5. $g(x) = (x-2)^2 + 5$

6. $y = 4\sqrt[3]{x} - \frac{1}{2}$

7. $h(x) = \frac{7x+5}{4}$

1.6 - Compositions and Operations of Functions

Given $f(x) = x^2 - 1$, $g(x) = 2x - 3$, and $h(x) = 1 - 4x$, find the following:

1. $(f + g)(x)$
2. $(h \cdot g)(x)$
3. $(g - h)(x)$
4. $(g - f)(x)$

Given $f(x) = 3x + 3$, $g(x) = 6x - 5$, and $h(x) = x^2 + 14$, find the following:

5. $f(g(-3))$
6. $(f \circ h)(7)$
7. $g(h(24))$
8. $(h \circ f)(9)$
9. $g(f(0))$
10. $(h \circ g)(-4)$

Given $f(x) = 9 - x$, $g(x) = x^2 + 3$, and $h(x) = x - 2$, find the following:

11. $(g \circ f)(x)$
12. $f(g(x))$
13. $(h \circ f)(x)$
14. $f(h(x))$
15. $(h \circ g)(x)$
16. $(g \circ g)(x)$

17. A toy manufacturer has a new product to sell. The number of units to be sold, x , is a function of the price p : $n(p) = 30 - 25p$. The revenue r earned is a function of the number of units sold x : $r(x) = 1000 - \frac{1}{4}x^2$. Find the function for revenue r in terms of price, p .

18. Tyrone Davis has \$180 deducted from every paycheck for retirement. He can have these deductions taken before taxes are applied, which reduces his taxable income. His federal income tax rate is 18%. If Tyrone earns \$2200 every pay period, find the difference in his net income if

- a. he has the retirement deduction taken before taxes
- b. he has the retirement deduction taken after taxes
- c. Which scenario would you choose and why?