

Name \_\_\_\_\_ Block \_\_\_\_\_ Date \_\_\_\_\_

### **Algebra 2: Test 1 Review 1**

1. Consider the following polynomial functions:

$$f(x) = x^2 - 4x + 5$$

$$g(x) = 7x^2 - 4x - 2$$

Evaluate  $g(x) - f(x)$ .

2. A polynomial function is given.

$$h(c) = 2c^4 - 1$$

Find  $(h(c))^2$  and write an equivalent expression.

3. An equation is shown.

$$\frac{x^3 - 13x^2 - 12}{x - 4} = Ax^2 + Bx + C + \frac{G(x)}{H(x)}$$

What are the values of  $B$ ,  $G(x)$ , and  $H(x)$  that would make the equation true? Write the most appropriate answer in each space provided.

$C =$

$G(x) =$

$H(x) =$

4. Consider the following functions.

$$r(x) = 5x^2 + 1$$

$$b(x) = 6x - 10$$

$$d(x) = \frac{2x - 3}{5}$$

Evaluate the following function compositions.

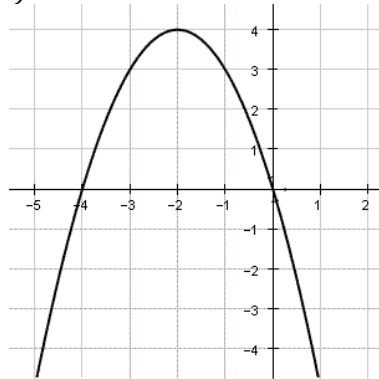
\_\_\_\_\_  $(r \circ d)(-1)$

\_\_\_\_\_  $(b \circ d)(0)$

\_\_\_\_\_  $(b \circ r)(3)$

5. What is the inverse function of  $g(x) = 5x - 8$  ?

6. A quadratic function  $f(x)$  is shown.

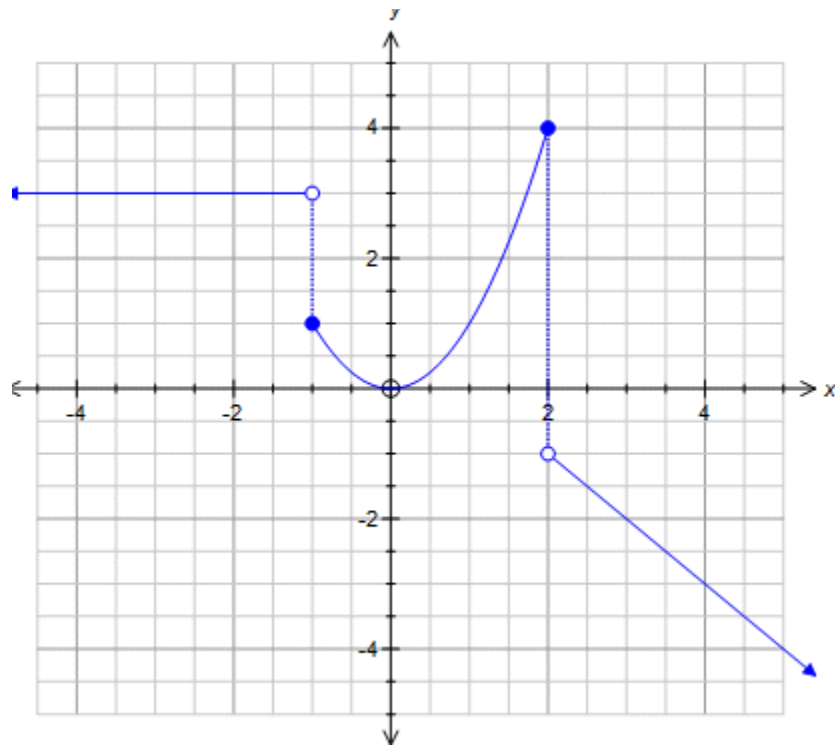


Select symbols and values to restrict the domain of  $f(x)$  so that  $f^{-1}(x)$  is also a function.

...     ,     ...

(	+	0	+	0	)
[	-	1	-	1	]
		2		2	
		3		3	
		4		4	
		5		5	
		6		6	
		7		7	
		8		8	
		9		9	
		∞		∞	

7. Consider the following graph of  $c(x)$ , a piecewise function, and determine the following answers in interval notation.



Interval(s) Increasing:

Interval(s) Decreasing:

Positive Interval(s):

Negative Interval(s):

Domain:

Range:

$y$ -intercept:

$x$ -intercept(s):

Relative Minimum(s):

Relative Maximum(s)

9. Solve for  $x$ .

$$8(x - 3) - (6 - 2x) = 2(x + 2) - 5(5 - x)$$

---

10. Solve for  $a$ .

$$\frac{1}{8}(a + 3) = \frac{1}{2}(2 - a)$$

---

11. Solve for  $F$ .

$$C = \frac{5}{9}(F - 32)$$

---

12. Solve for  $t$ .

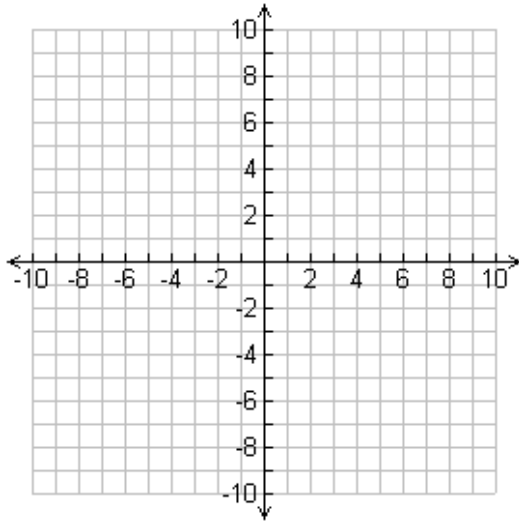
$$A = 2pa + prt$$

---

13. Graph and solve the linear system.

$$x - 3y = -6$$

$$2x - y = 3$$



(   ,   )

+  
-

0  
1  
2  
3  
4  
5  
6  
7  
8  
9  
∞

+  
-

0  
1  
2  
3  
4  
5  
6  
7  
8  
9  
∞

14. Solve the system using substitution or elimination method.

$$-3x - 3y = -18$$

$$y = -6x + 21$$

(   ,   )

+  
-

0  
1  
2  
3  
4  
5  
6  
7  
8  
9  
∞

+  
-

0  
1  
2  
3  
4  
5  
6  
7  
8  
9  
∞

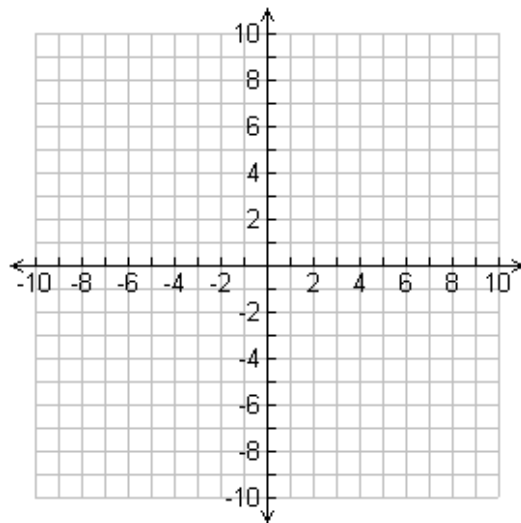
15. The state fair is a popular field trip destination. This year the senior class at High School A and the senior class at High School B both planned trips there. The senior class at High School A rented and filled 8 vans and 8 buses with 240 students. High School B rented and filled 4 vans and 1 bus with 54 students. Every van had the same number of students in it as did the buses. Find the number of students in each van and in each bus.

Number of Students in a van

Number of Students in a bus

16. Graph the system of inequalities.

$$\begin{aligned}y &\leq 4 \\ 2x + 3y &> 6 \\ 2x - y &\leq 8\end{aligned}$$



17. Solve the system of equations.

$$-6x - 2y - z = 17$$

$$5x + y - 6z = 19$$

$$-4x - 6y - 6z = -20$$

(   ,   ,   )

+  
-

0  
1  
2  
3  
4  
5  
6  
7  
8  
9  
∞

+  
-

0  
1  
2  
3  
4  
5  
6  
7  
8  
9  
∞

+  
-

0  
1  
2  
3  
4  
5  
6  
7  
8  
9  
∞

Solutions:

1.  $6x^2 - 7$
2.  $4c^8 - 4c^4 + 1$
3.  $-36, -156, x - 4$
4.  $6, -13.6, 266$
5.  $g^{-1}(x) = \frac{x+8}{5}$
6. Answers may vary  $(-\infty, -2]$  or  $[-2, \infty)$

- (0,2)      (1,0)  
 $(-\infty, 2)$        $(2, \infty)$   
 $(-\infty, \infty)$        $(-\infty, 4)$   
 $y = 0$        $x = 0, 2$

7. (0,0)      (2,4)

-1	9
0	-7
1	9
2.5	9
3	-3

- 8.
9.  $x = 3$

10.  $a = 1$

11. Answers May Vary

$$F = \frac{9}{5}C + 32$$

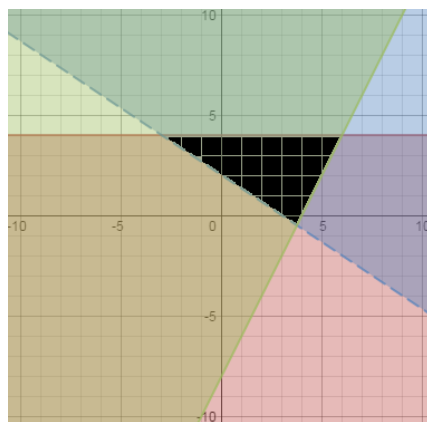
$$F = \frac{9C+160}{5}$$

12.  $t = \frac{A-2pa}{pr}$

13. (3,3)

14. (3,3)

15. 8 in a van, 22 in a bus



- 16.

17. (2,3,-1)



Name \_\_\_\_\_ Block \_\_\_\_\_ Date \_\_\_\_\_

## **Algebra 2 Honors: Test 1 Review 2**

1. Consider the following polynomial functions:

$$f(x) = x^2 - 4x + 5$$

$$g(x) = 7x^2 - 4x - 2$$

Evaluate  $f(x) - g(x)$ .

2. A polynomial function is given.

$$v(x) = 3x^3 - 9$$

Find  $(v(x))^2$  and write an equivalent expression.

3. An equation is shown.

$$\frac{x^3 - 20}{x - 3} = Ax^2 + Bx + C + \frac{R(x)}{Q(x)}$$

What are the values of  $B$ ,  $G(x)$ , and  $H(x)$  that would make the equation true? Write the most appropriate answer in each space provided.

$B =$

$R(x) =$

$Q(x) =$

4. Consider the following functions.

$$k(x) = \frac{1}{2}x + 4$$

$$j(x) = x^2$$

$$m(x) = 7x - 1$$

Evaluate the following function compositions.

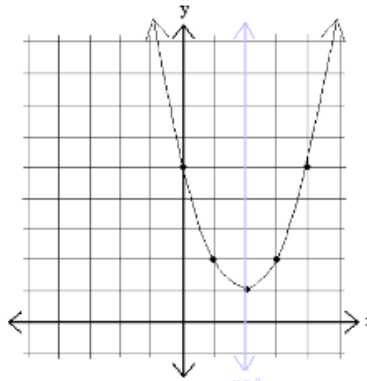
\_\_\_\_\_  $(m \circ k)(2)$

\_\_\_\_\_  $(j \circ m)(-3)$

\_\_\_\_\_  $(k \circ j)(0)$

5. What is the inverse function of  $g(x) = 7x^2 - 3$  ?

6. A quadratic function  $f(x)$  is shown.

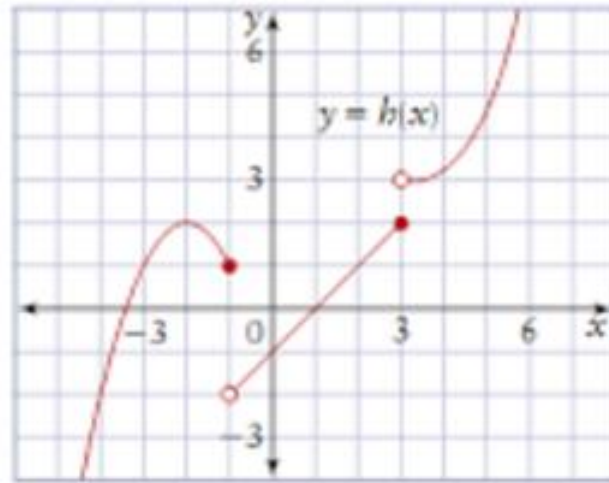


Select symbols and values to restrict the domain of  $f(x)$  so that  $f^{-1}(x)$  is also a function.

..... ○ □ , ○ □ .....

(	+	0	+	0	)
[	-	1	-	1	]
		2		2	
		3		3	
		4		4	
		5		5	
		6		6	
		7		7	
		8		8	
		9		9	
		∞		∞	

7. Consider the following graph of  $h(x)$ , a piecewise function, and determine the following answers in interval notation.



Interval(s) Increasing:

Interval(s) Decreasing:

Positive Interval(s):

Negative Interval(s):

Domain:

Range:

$y$  -intercept:

$x$  -intercept(s):

Relative Minimum(s):

Relative Maximum(s)



9. Solve for  $x$ .

$$2(5 - 3x) = x - 4(3 - x)$$

---

11. Solve for  $C$ .

$$D = \frac{C-S}{n}$$

---

10. Solve for  $c$ .

$$-\frac{1}{9}(2c + 3) = \frac{4}{3}(5 - c)$$

---

12. Solve for  $y$ .

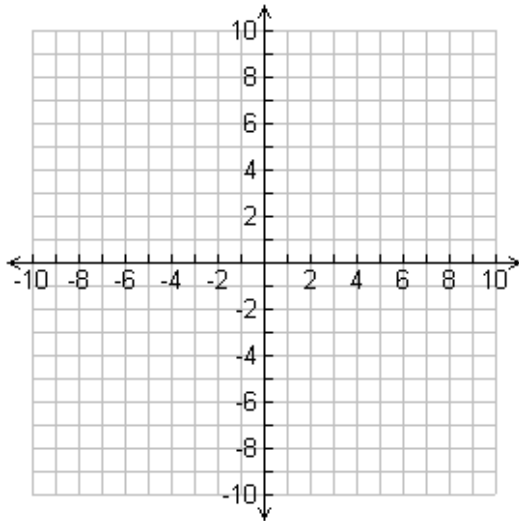
$$ax + by = c$$

---

13. Graph and solve the linear system.

$$x - 4y = -4$$

$$5x - 4y = 12$$



(   ,   )

+	0	+	0
-	1	-	1
	2		2
	3		3
	4		4
	5		5
	6		6
	7		7
	8		8
	9		9
	∞		∞

14. Solve the system using substitution or elimination method.

$$y = -3x + 5$$

$$5x - 4y = -3$$

(   ,   )

+	0	+	0
-	1	-	1
	2		2
	3		3
	4		4
	5		5
	6		6
	7		7
	8		8
	9		9
	∞		∞

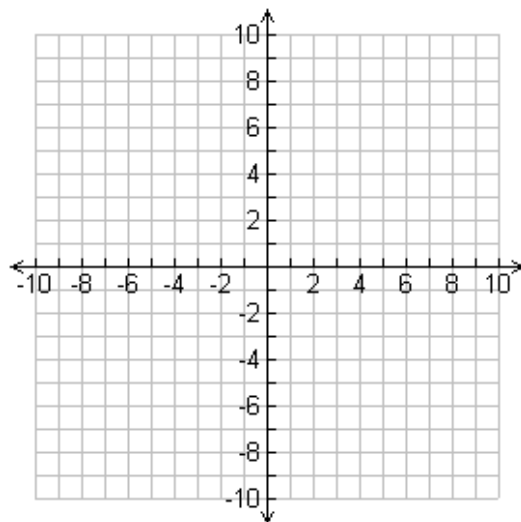
15. Matt and Ming are selling fruit for a school fundraiser. Customers can buy small boxes of oranges and large boxes of oranges. Matt sold 3 small boxes of oranges and 14 large boxes of oranges for a total of \$203. Ming sold 11 small boxes of oranges and 11 large boxes of oranges for a total of \$220.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

Cost of a small box of oranges

Cost of a large box of oranges

16. Graph the system of inequalities.

$$\begin{aligned}x &< 6 \\ -2x + 3y &\geq -21 \\ 3x - 2y &> 4\end{aligned}$$



17. Solve the system of equations.

$$-5x + 3y + 6z = 4$$

$$-3x + y + 5z = -5$$

$$-4x + 2y + z = 13$$

(   ,   ,   )

+  
-

0  
1  
2  
3  
4  
5  
6  
7  
8  
9  
∞

+  
-

0  
1  
2  
3  
4  
5  
6  
7  
8  
9  
∞

+  
-

0  
1  
2  
3  
4  
5  
6  
7  
8  
9  
∞



Solutions:

1.  $-6x^2 + 7$

2.  $9x^6 - 54x^3 + 81$

3.  $3, 7, x - 3$

4.  $34, 484, 4$

5.  $g^{-1}(x) = \sqrt{\frac{x+3}{7}}$

6. Answers may vary  $(-\infty, 2]$  or  $[2, \infty)$

$(-\infty, 2) \cup (-1, \infty)$        $(-2, -1)$

$(-3.5, -1) \cup (1, \infty)$        $(-\infty, -3.5) \cup (-1, 1)$

$(-\infty, \infty)$        $(-\infty, \infty)$

$y = -1$        $x = 1$

7.  $(-1, -2)$        $(-2, -2)$

0	-1
6	-7
12	3
18	-1
27	-1

8.

9.  $x = 2$

10.  $c = 6.3$

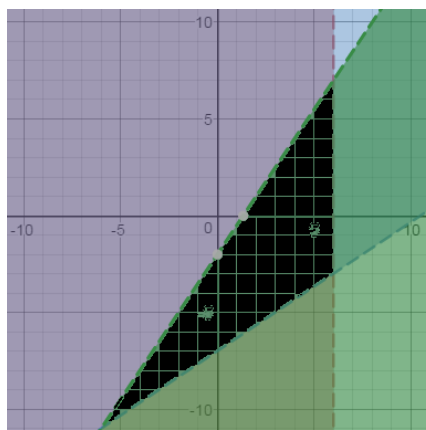
11.  $C = nD + S$

12.  $y = \frac{c-ax}{b}$

13.  $(4, 2)$

14.  $(1, 2)$

15. 7 small, 13 large



16.

17.  $(-2, 4, -3)$