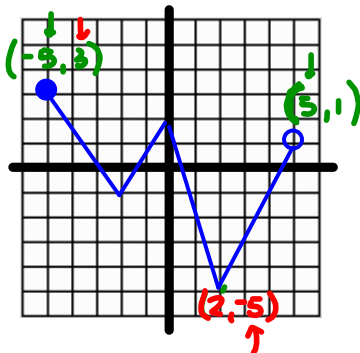


Let's review 7.6-7.8 & Domain

1) Write the domain and range of  $f(x)$  in interval notation.

Is the graph a function?

$D [-5, 5]$   
 $R [-5, 3]$



Using the graph to the left, find each value.

- 2)  $f(f(0)) = -5$
- 3)  $f(-2) \cdot f(-5) = -3$
- 4)  $f(x) =$  undefined.
- 5)  $f^{-1}(-5) = ?$

Write the domain in interval notation.

6)  $y = \sqrt{2x+12} \geq 0$

$-2x+12 \geq 0$   $[-6, \infty)$   
 $-2x \geq -12$   
 $x \geq -6$   $(-\infty, 6]$

7)  $y = \frac{2x+12}{x^2+4x-5} \neq 0$

$(x+5)(x-1)$   
 $x \neq -5 \mid x \neq 1$

$(-\infty, -5) \cup (-5, 1) \cup (1, \infty)$

Feb 3-2:05 PM

Stuff to know for your Ch 7 Test!

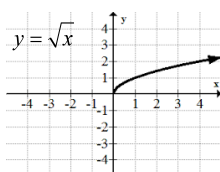
**INVERSE FUNCTIONS**  
 Original function:  $f(x) = 3x + 2$

1. Replace  $f(x)$  with  $y$ .  
 $y = 3x + 2$
2. Inverse the  $x$  and  $y$  variables.  
 $x = 3y + 2$
3. Solve for  $y$ .  
 $x = 3y + 2$   
 $-2 = -2$   
 $x - 2 = 3y$   
 $\frac{x-2}{3} = y$
4. Replace  $f(x)$  with  $f^{-1}(x)$ .  
 $\therefore f^{-1}(x) = \frac{x-2}{3}$

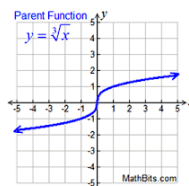
Domain: - equation  $(-\infty, \infty)$   
 - fraction denom  $\neq 0$   
 -  $\sqrt{\text{radicand}} \geq 0$

Graphs of square/cube roots w/shifts, stretches, shrinks and reflecting over the x-axis

Domain/Range



x	y
0	0
1	1
4	2



x	y
0	0
1	1
-1	-1

Function Operations

1. addition  $(f + g)(x) = f(x) + g(x)$
2. subtraction  $(f - g)(x) = f(x) - g(x)$
3. multiplication  $(fg)(x) = f(x) \cdot g(x)$
4. division  $\left(\frac{f}{g}\right)(x) = \frac{f(x)}{g(x)}$
5. composition  $(f \circ g)(x) = f(g(x))$

Feb 4-9:18 AM

*Let's review in groups of two with a practice test. Work with a partner, when you are done, use the answer key to check so that you can predict your grade on the test.*

**Teacher: "You're able to form groups of two with anyone you want."**



Jan 31-3:35 PM

**GO COUGARS!**



*When you are done, use the answer key to check so that you can predict your grade on the test.*

**Test 7.6-7.8 & Domain/Range  
Block Day**

**HW - WB pg. 68 #1-26 &  
WB pg. 64 #13-23 odd**

Feb 1-12:11 PM

WB pg 68 - ANS KEY

Algebra II Page 68

**Review 7-6 through 7-8 and domain.**

Let  $f(x) = 3x^2 - 2x$  and  $g(x) = x - 6$ . Find each value.

- $(f \circ g)(2) = 12$
- $(\frac{f}{g})(-1) = \frac{-5}{7}$
- $(g \circ f)(3) = 15$
- $(f \circ g)(0) = 120$

Find the inverse of each function algebraically. Is the inverse a function?

- $y = x^2 + 2$   $y = \pm\sqrt{x-2}$  no
- $y = (x+3)^2$   $y = \pm\sqrt{x-3}$  no
- $y = 2x - 1$   $y = \frac{x+1}{2}$  yes

For each function  $f$ , find  $f^{-1}$  algebraically, find the domain and range of  $f$ , find  $f^{-1}$ . Write the domain and range in interval notation. Determine whether  $f^{-1}$  is a function.

- $f(x) = -x + 2$   $f^{-1}(x) = -x + 2$  D:  $(-\infty, \infty)$  R:  $(-\infty, \infty)$
- $f(x) = x^2 - 2$   $f^{-1}(x) = \pm\sqrt{x+2}$  D:  $[-2, \infty)$  R:  $[-2, \infty)$
- $f(x) = \sqrt{x-1}$   $f^{-1}(x) = x^2 + 1$  D:  $[0, \infty)$  R:  $[1, \infty)$

Let  $f(x) = -2x^2 - 1$  and  $g(x) = 3x - 4$ . Find each combination.

- $(g \circ f)(x) = 2x^2 + 3x - 3$
- $(f \circ g)(x) = -18x^2 + 48x - 53$
- $(g \circ g)(x) = 9x - 14$

Let  $f(x) = 2x + 5$ . Find each value.

- $(\frac{f}{g})(x)$  what is the domain of  $(\frac{f}{g})(x)$ ?  $D: (-\infty, \frac{5}{3}) \cup (\frac{5}{3}, \infty)$
- $(f^{-1} \circ f)(-1) = -1$
- $f(f^{-1}(\frac{1}{2})) = \frac{1}{2}$

Graph each function.

- $y = -\sqrt{x+2}$
- $y = -\sqrt{x-1}$
- $y = -\sqrt{x-2} + 3$
- $y = \sqrt[3]{x-1}$
- $y = \sqrt[3]{x+1} - 2$
- $y = -\sqrt[3]{x} + 2$

State the domain using interval notation.

- $f(x) = \frac{x-7}{x^2-2x-15}$   $(-\infty, -3) \cup (5, \infty)$
- $f(x) = 4x^3 - 7x^2 + 2x + 5$   $(-\infty, \infty)$
- $f(x) = \frac{5x^2-11}{10x^2-5x}$   $(-\infty, 0) \cup (\frac{1}{2}, \infty)$
- $f(x) = \sqrt{2x+10}$   $[-5, \infty)$

Feb 3-2:35 PM

WB pg 63 - evens ANS KEY

Algebra II Page 63

**Inverses and Graphing Radical Functions (7.7 and 7.8)**

SHOW ALL WORK ON A SEPARATE PIECE OF PAPER.

Find the inverse of each function algebraically. Is the inverse a function?

- $y = \frac{1}{2}x + 5$
- $y = 2x + 5$   $y = \frac{x-5}{2}$ ; yes
- $y = 4x^2$
- $y = x^2 + 2$   $y = \pm\sqrt{x-2}$ ; no
- $y = (x+3)^2$
- $y = 2x - 1$   $y = \frac{x+1}{2}$  or  $\frac{1}{2}x + \frac{1}{2}$ ; yes
- $y = 1 - 3x^2$

For each function  $f$ , find  $f^{-1}$  algebraically, then use your calculator to find the domain and range of  $f$  and  $f^{-1}$ . Write the domain and range in interval notation. Determine whether  $f^{-1}$  is a function.

- $f(x) = \frac{1}{2}x + 2$   $f^{-1}(x) = -5x + 10$  D:  $(-\infty, \infty)$  R:  $(-\infty, \infty)$
- $f(x) = x^2 - 2$   $f^{-1}(x) = \pm\sqrt{x+2}$  D:  $[-2, \infty)$  R:  $[-2, \infty)$
- $f(x) = \sqrt{x-1}$   $f^{-1}(x) = x^2 + 1$  D:  $[0, \infty)$  R:  $[1, \infty)$

Find the inverse of each relation. Graph the given relation and its inverse.

- |   |    |    |    |   |
|---|----|----|----|---|
| x | -2 | -1 | 0  | 1 |
| y | -3 | -2 | -1 | 0 |

Let  $f(x) = 2x + 5$ . Find each value.

- $f^{-1}(f(-1)) = -1$
- $ff^{-1}(\frac{1}{2}) = \frac{1}{2}$

Graphs and domains/ranges:

- Graph (i):  $D: [-2, \infty)$  R:  $(-\infty, 0]$
- Graph (ii):  $D: [2, \infty)$  R:  $(-\infty, 3]$
- Graph (iii):  $D: (-\infty, \infty)$  R:  $(-\infty, \infty)$
- Graph (iv):  $D: [4, \infty)$  R:  $(2, \infty)$
- Graph (v):  $D: (-\infty, \infty)$  R:  $(-\infty, \infty)$
- Graph (vi):  $D: (-\infty, \infty)$  R:  $(-\infty, \infty)$

Jan 22-2:36 PM

**WB pg 64 - evens - ANS KEY**

Algebra II Page 52

**Relations and Functions, Domain and Range**

State only the domain using interval notation.

1. $f(x) = \frac{7}{x^2 - 4x - 5}$ $(-\infty, -1)(-1, 5)(5, \infty)$	2. $f(x) = \frac{x^4 - 2x + 7}{3x^2 - 10x - 8}$ $(-\infty, -\frac{2}{3})(-\frac{2}{3}, 4)(4, \infty)$	3. $f(x) = \frac{x+7}{2x^2 - 18x}$ $(-\infty, 0)(0, 9)(9, \infty)$
4. $f(x) = \frac{x^2 - 11}{3x^2 + 11x + 6}$ $(-\infty, -3)(-3, -\frac{2}{3})(-\frac{2}{3}, \infty)$	5. $f(x) = \frac{3x}{5x^2 - 20}$ $(-\infty, -2)(-2, 2)(2, \infty)$	6. $f(x) = \frac{9x}{4x^2 + 12x - 7}$ $(-\infty, -\frac{7}{2})(-\frac{7}{2}, \frac{1}{2})(\frac{1}{2}, \infty)$
7. $f(x) = \frac{3}{x^2 + 3x - 18}$ $(-\infty, -3)(-3, 6)(6, \infty)$	8. $f(x) = \frac{2x}{x^2 - 10x + 25}$ $(-\infty, 5)(5, \infty)$	9. $f(x) = \frac{5x^2 - 11}{10x^2 - 19x + 6}$ $(-\infty, \frac{2}{5})(\frac{2}{5}, \frac{3}{2})(\frac{3}{2}, \infty)$
10. $f(x) = \frac{18}{18x^2 - 2}$ $(-\infty, -\frac{1}{3})(-\frac{1}{3}, \frac{1}{3})(\frac{1}{3}, \infty)$		

State the domain and range using interval notation.

11. D: $(-\infty, \infty)$ R: $(-\infty, 2]$	12. D: $[-3, \infty)$ R: $(-\infty, \infty)$	13. D: $\mathbb{R}$ R: $(-\infty, \infty)$
14. D: $(-\infty, \infty)$ R: $[0, \infty)$	15. D: $[-4, \infty)$ R: $(-\infty, 0]$	16. D: $[-2, 2]$ R: $[-2, 2]$

Suppose  $f(x) = -3x + 2$  and  $g(x) = \frac{1}{2}x - 1$ . Find each value.

17. $(f + g)(\frac{1}{3}) = \frac{1}{6}$	18. $(g \circ f)(4) = -6$	19. $\frac{g(-2)}{f(3)} = \frac{2}{7}$	20. $(g - f)(-8) = -3$
21. $f(g(x)) = \frac{3}{2}x + 5$	22. $(g \circ f)(x) = \frac{3}{2}x$	23. $(f \circ f)(5) = 5$	24. $g'(x) = 2x + 2$

Jan 8-2:48 PM

EXTRA PROBLEMS IF NECESSARY

Feb 3-2:26 PM

*Let's review 7.6-7.8 & Domain*

1) Find the inverse of:  $y = (x - 2)^2 + 5$   
then state the domain and range of both the function and the inverse.

Inverse of f(x)  
1<sup>st</sup> switch x & y  
2<sup>nd</sup> solve for y

2) Given  $f(x) = 2x + 5$  and  $f^{-1}(x) = \frac{x - 5}{2}$  find the value of:  $f(f^{-1}(11))$  →

3) State the domain, using interval notation, of:

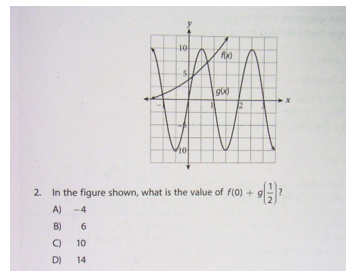
$y = 3\sqrt{2x - 5} + 7$       $y = \frac{12x + 15}{12x^2 - 6x}$       $y = 12x^2 - 6x$

4) Given  $f(x) = 6 - x^2$  and  $h(x) = 3x + 2$  find:

$(f \cdot h)(3)$      $(h \circ f)(3)$      $f(h(x))$      $\frac{f}{h}(x)$  and state the domain     $(f-h)(x)$

5) Graph:  $y = -2\sqrt{x + 1} + 5$

6)



Feb 3-10:23 AM

$\sqrt{x}$

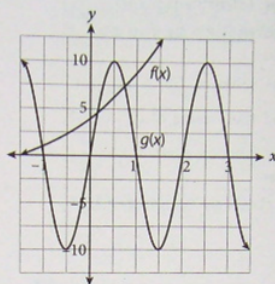
Prepare

Give this function question a try:

**1.** Given that  $f(x) = 2x + 1$  and  $g(x) = \frac{x + 2}{3}$ , what is the value of  $(fg)(-5)$ ?

A) -6  
B) -2  
C) 3  
D) 9

Jan 19-2:48 PM



2. In the figure shown, what is the value of  $f(0) + g\left(\frac{1}{2}\right)$ ?

- A) -4
- B) 6
- C) 10
- D) 14

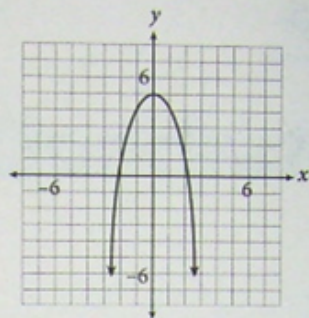
Jan 19-2:49 PM

3. For the two functions  $f(x)$  and  $g(x)$ , tables of values follow. What is the value of  $f(g(1))$ ?

$x$	$f(x)$	$x$	$g(x)$
-2	8	-1	-4
-1	6	1	0
0	4	2	2
1	2	4	6

- A) 0
- B) 2
- C) 4
- D) 6

Jan 19-2:49 PM

**5.**

10. The graph of  $f(x)$  is shown here. Which of the following represents the domain and range of the function?
- A) Domain:  $f(x) \geq 5$ ; Range: all real numbers
  - B) Domain:  $f(x) \leq 5$ ; Range: all real numbers
  - C) Domain: all real numbers; Range:  $f(x) \geq 5$
  - D) Domain: all real numbers; Range:  $f(x) \leq 5$

Jan 19-2:49 PM

ANSWER KEYS WB pg. 63,64,68 on the next slides

Jan 19-2:49 PM

GO COUGARS!



**Algebra II Test DAY!**



- One person per table!

- Pencils only!



- After your test.....

*Good Luck!*

Aug 29-11:17 AM