

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Period: \_\_\_\_\_

6.6-6.8 Review

Section 1: 6.6 Functions Operations

For #1-4, let  $f(x) = 4x - 1$  and  $g(x) = 2x^2 + 3$ . Perform each function operation and then find the domain.

<p>1. <math>(f+g)(x)</math>  <math>4x-1+2x^2+3</math>  <math>2x^2+4x+2</math>  <math>D: \mathbb{R}</math></p>	<p>2. <math>(f-g)(x)</math>  <math>(4x-1)-(2x^2+3)</math>  <math>4x-1-2x^2-3</math>  <math>-2x^2+4x-4</math>  <math>D: \mathbb{R}</math></p>
<p>3. <math>(f \cdot g)(x)</math>  <math>(4x-1)(2x^2+3)</math>  <math>8x^3-2x^2+12x-3</math>  <math>D: \mathbb{R}</math></p>	<p>4. <math>\frac{g}{f}(x)</math> <math>\frac{2x^2+3}{4x-1}</math>  <math>D: \mathbb{R} \ x \neq \frac{1}{4}</math></p>

For #5-6, let  $f(x) = 2x$  and  $g(x) = \sqrt{x} - 1$ . Perform each function operation and then find the domain.

<p>5. <math>(g \circ f)(x) =</math>  <math>\sqrt{2x} - 1</math>  <math>D: [0, \infty)</math></p>	<p>6. <math>(f \circ g)(x) =</math>  <math>2(\sqrt{x} - 1) = 2\sqrt{x} - 2</math>  <math>D: [0, \infty)</math></p>
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For #7-8, let  $f(x) = -3x + 2$ ,  $g(x) = \frac{x}{5}$ ,  $h(x) = -2x^2 + 9$ , and  $j(x) = 5 - x$ . Find each value.

<p>7. <math>(f \circ j)(3)</math>  <math>-3(5-x) + 2</math>  <math>-15 + 3x + 2</math>  <math>3x - 13</math>  <math>3(3) - 13</math>  <math>9 - 13</math>  <math>\boxed{-4}</math></p>	<p>8. <math>(h \circ g)(-5)</math>  <math>-2(\frac{x}{5})^2 + 9</math>  <math>-2(\frac{-5}{5})^2 + 9</math>  <math>-2(\frac{25}{25}) + 9</math>  <math>-2 + 9 = \boxed{7}</math></p>
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Section 2: 6.7 Inverse Relations and Functions

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

9.

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

10.

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

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

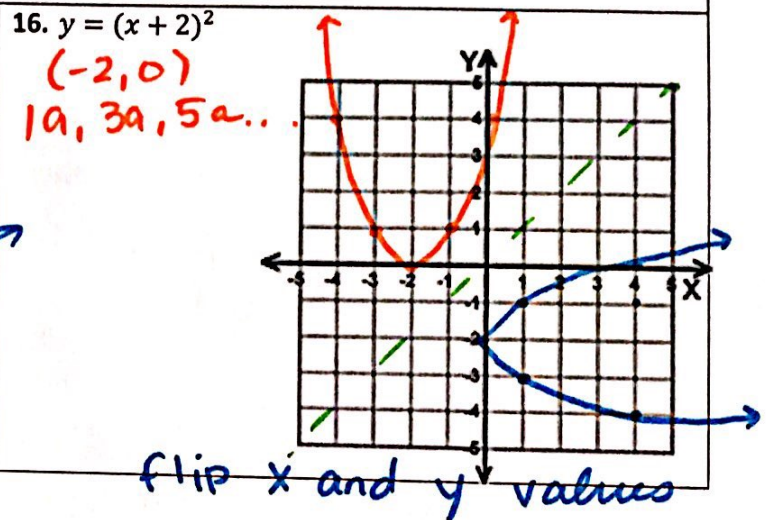
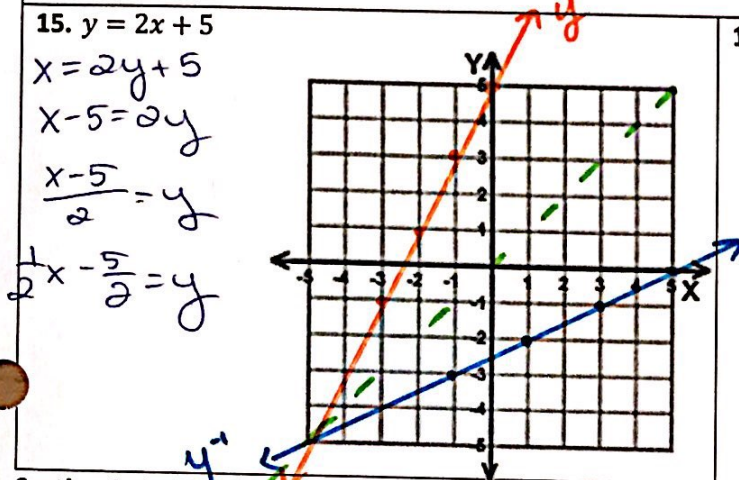
11.  $y = (x+3)^2$   $f^{-1}(x) = -3 \pm \sqrt{x}$   
 $x = (y+3)^2$   
 $\pm\sqrt{x} = y+3$   
 $-3 \pm \sqrt{x} = y$   
 not a function

12.  $y = 3(x+1)$   $f^{-1}(x) = \frac{x}{3} - 1$   
 $x = 3(y+1)$   
 $\frac{x}{3} = y+1$   
 $\frac{x}{3} - 1 = y$   
 yes, it is a function

13.  $y = x^2 + 4$   $f^{-1}(x) = \pm\sqrt{x-4}$   
 $x = y^2 + 4$   
 $x-4 = y^2$   
 $\pm\sqrt{x-4} = y$   
 not a function

14.  $f(x) = \sqrt{x-1}$   $f^{-1}(x) = x^2 + 1$   
 $x = \sqrt{y-1}$   
 $x^2 = y-1$   
 $x^2 + 1 = y$   
 yes, it is a function

Graph each relation and its inverse.



Section 3: 6.8 Graphing Radical Function

Graph each function. Use a separate sheet of graph paper.

17.  $y = \sqrt{x-3}$

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

19.  $y = \frac{1}{4}\sqrt{x-1} + 5$

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

Rewrite each function to make it easy to graph using transformations of its parent function. Describe the graph.

21.  $y = \sqrt{81x+162}$   
 $y = \sqrt{81(x+2)}$   
 $y = \sqrt{81} \sqrt{x+2}$   
 $y = 9\sqrt{x+2}$   
 • stretch  
 • left 2

22.  $y = -\sqrt{4x+20}$   
 $y = -\sqrt{4(x+5)}$   
 $y = -\sqrt{4} \sqrt{x+5}$   
 $y = -2\sqrt{x+5}$   
 • reflect  
 • left 5  
 • stretch

23.  $y = -\sqrt[3]{8x-56} + 4$   
 $y = -\sqrt[3]{8(x-7)} + 4$   
 $y = -\sqrt[3]{8} \sqrt[3]{x-7} + 4$   
 $y = -2\sqrt[3]{x-7} + 4$   
 • reflect  
 • right 7  
 • up 4  
 • stretch

24.  $y = \sqrt[3]{27x-54}$   
 $y = \sqrt[3]{27(x-2)}$   
 $y = \sqrt[3]{27} \sqrt[3]{x-2}$   
 $y = 3\sqrt[3]{x-2}$   
 • stretch  
 • right 2