

Alg 2-4 Review for Unit 5 Test

Name Key

1. Solve the equation  $-3 + \sqrt{x-2} = -1$ .  

$$\begin{array}{r} -3 + \sqrt{x-2} = -1 \\ +3 \quad +3 \end{array}$$

$$(\sqrt{x-2})^2 = (2)^2 \quad x-2 = 4 \quad x = 6$$

$$\begin{array}{r} +2 \quad +2 \\ \text{true} \end{array}$$

2. Solve  $\sqrt{8x} = 2\sqrt{x+3}$ .  

$$x = 3$$

3. Solve:  $\sqrt{x+5} = -3$   
 No Solution

4. Solve:  $\sqrt{x+25} = 19+x$   

$$x = -16$$

5. Solve the equation  $(x\sqrt{2})^2 = (\sqrt{18})^2$   

$$2x^2 = \frac{18}{2} \quad x = 3$$

$$\sqrt{x^2} = \sqrt{9}$$
~~$$x = 3$$~~

6. Solve the equation  $\frac{5\sqrt{x}}{5} = \frac{45}{5}$   

$$(\sqrt{x})^2 = (9)^2$$

$$x = 81$$

8. Which of the following pairs of functions are NOT inverses of one another?

- a.  $f(x) = \frac{1}{3}x, g(x) = 3x$
- b.  $f(x) = x^2 + 1, g(x) = \sqrt{x-1}$
- c.  $f(x) = 2x^3, g(x) = \sqrt[3]{\frac{x}{2}}$
- d.  $f(x) = 2x+1, g(x) = 2x-1$

9. Which is the inverse of  $f(x) = \sqrt{3x-1}$ ?  

$$f^{-1}(x) = \frac{x^2}{3} + \frac{1}{3}$$

$$x^2 = (\sqrt{3y-1})^2 \quad \frac{x^2+1}{3} = \frac{3y}{3}$$

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

10. What is the inverse of the function  $f(x) = 3x^2 - 2$ ?  

$$f^{-1}(x) = \sqrt{\frac{x}{3} + \frac{2}{3}}$$

$$x = 3y^2 - 2 \quad \sqrt{y^2} = \sqrt{\frac{x}{3} + \frac{2}{3}}$$

$$\frac{x+2}{3} = \frac{3y^2}{3}$$

11. Solve to find the inverse of  $f(x) = \frac{1}{2}x^2$ .  

$$f^{-1}(x) = \sqrt{2x}$$

$$2x = (\frac{1}{2}y^2) \cdot 2$$

$$\sqrt{2x} = \sqrt{y^2}$$

$$4x = \left(\frac{1}{4} y^3\right) 4$$

$$\sqrt[3]{4x} = \sqrt[3]{\frac{1}{4} y^3}$$

12. Which is the inverse of  $f(x) = .25x^3$ ?

$$f^{-1}(x) = \sqrt[3]{4x}$$

13. Find the inverse of  $f$ .

x	3	0	-3	1	6
f(x)	0	-3	-1	4	-5

x	0	-3	-1	4	-5
y	3	0	-3	1	6

**Short Answer**

17. Find the inverse of  $h(x) = 5x^2$ .

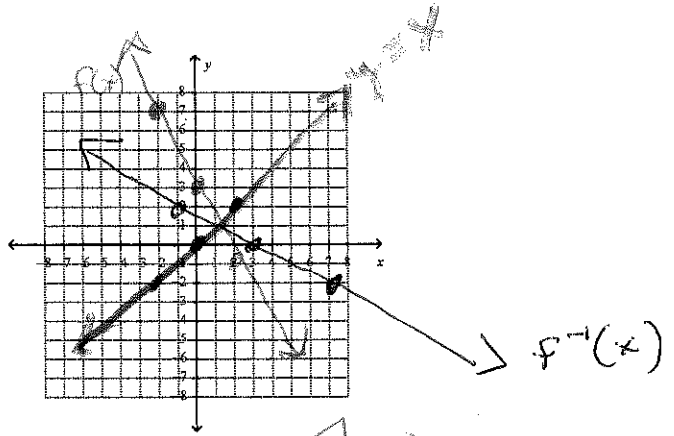
$$\frac{x}{5} = \frac{5x^2}{5} \quad \sqrt{\frac{x}{5}} = \sqrt{y^2} \quad h^{-1}(x) = \sqrt{\frac{x}{5}}$$

18. Find the inverse of  $f(x) = -2x + 3$ .

Then graph both functions.

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

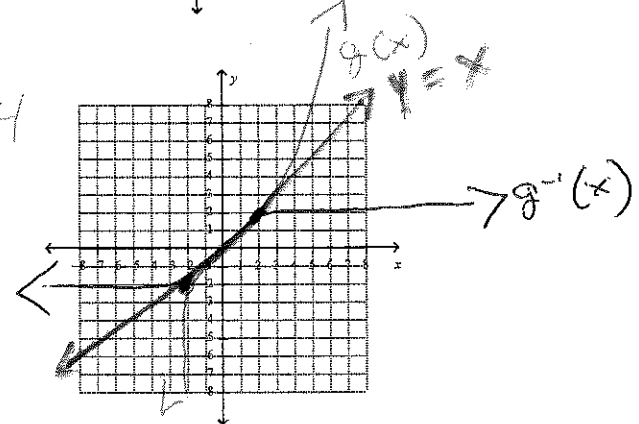
f(x)	-3	7	-2	f <sup>-1</sup> (x)	7	-2	f <sup>-1</sup> (x) =	$\frac{x}{2} - \frac{3}{2}$
	-2	0	2		3	0		
					-1	-1		



19. Find the inverse of  $g(x) = \frac{1}{4}x^3$ .

Then graph both functions.

g(x)	-2	-2	0	0	2	2	g <sup>-1</sup> (x)	$\sqrt[3]{4x}$



20. What is a one-to-one function?

Every input has 1 output & every output has 1 input  
or ALL the xs & ys are different!

Part B) Fill in the table with a one-to-one function.

x	-3	5	8	9	-2
y	3	7	-1	4	6

Answers may vary as long as ALL the xs & ys are different