

## Algebra 2 Ch. 5.1-5.3 Review Worksheet

Name Key Per \_\_\_\_\_#1-2: Find the indicated real  $n$ th roots of  $a$ .

1.  $n = 4, a = 256$

$-4, 4$

2.  $n = 3, a = -343$

$-7$

#3-4: Evaluate the expression without using a calculator.

3.  $625^{3/4}$

$125$

4.  $27^{-2/3}$

$\frac{1}{9}$

#5-6: Find the real solution(s) of the equation.

5.  $2x^6 = 1458$

$x = -3, 3$

6.  $(x+11)^3 = 216$

$x = -5$

#7-10: Simplify the expression.

7.  $\left(\frac{48^{1/4}}{6^{1/4}}\right)^6$

$8^{3/2}$

8.  $\sqrt[3]{9} \cdot \sqrt[4]{144}$

$6$

9.  $\frac{7}{5+\sqrt{3}}$

$\frac{7(5-\sqrt{3})}{22}$  or  $\frac{35-7\sqrt{3}}{22}$

10.  $\sqrt[3]{16} - 5\sqrt{2}$

$-3\sqrt[3]{2}$

#11-14: Write the expression in simplest form. Assume all variables are positive.

11.  $\sqrt[8]{x^{11}y^9z^{16}}$

$xyz^2\sqrt[8]{x^3y}$

12.  $\sqrt[3]{125x^9}$

$5x^3$

13.  $\frac{\sqrt[3]{32}}{\sqrt[3]{m^3}}$

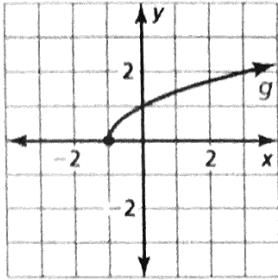
$\frac{2\sqrt[3]{m^2}}{m}$

14.  $\sqrt[3]{p^4q} + 7p\sqrt[3]{q}$

$8p\sqrt[3]{q}$

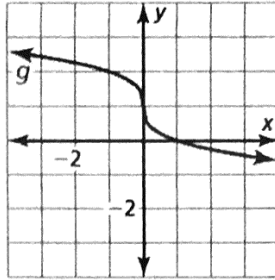
#15-17: Describe the transformation of the parent function represented by the graph of  $g$ . Then write a rule for  $g$ .

15. Parent function:  $f(x) = \sqrt{x}$



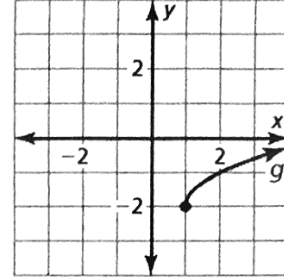
Shift left 1 unit.  
 $g(x) = \sqrt{x+1}$

16. Parent function:  $f(x) = \sqrt[3]{x}$



Reflect across x-axis  
 (or y-axis), shift 1 unit up.  
 $g(x) = -\sqrt[3]{x} + 1$   
 (or  $g(x) = \sqrt[3]{-x} + 1$ )

17. Parent function:  $f(x) = \sqrt{x}$

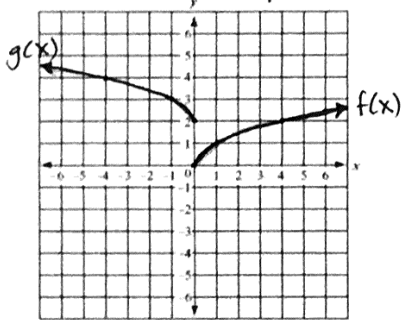


Shift right 1 unit,  
 shift down 2 units.  
 $g(x) = \sqrt{x-1} - 2$

#18-19: Describe the transformations of  $f$  represented by  $g$ . Then graph each function.

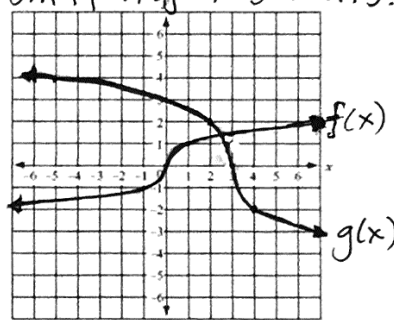
18.  $f(x) = \sqrt{x}$ ;  $g(x) = \sqrt{-x} + 2$

Reflect across y-axis  
 and shift up 2 units.



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

Reflect across x-axis, vertical  
 stretch by a factor of 2,  
 shift right 3 units.



20. Let the graph of  $g$  be a reflection in the y-axis and horizontal shrink by a factor of  $\frac{1}{5}$ , followed by a shift 4 units down to the graph of  $f(x) = \sqrt[3]{x}$ . Write a rule for  $g$ .

$$g(x) = \sqrt[3]{-5x} - 4$$

21. An investigator can determine how fast a car was traveling just prior to an accident using the model  $s = 4\sqrt{d}$ , where  $s$  is the speed (in miles per hour) of the car and  $d$  is the length (in feet) of the skid marks. In a certain accident, the length of the skid marks of the car is 90 feet. Was the car traveling in accordance with the posted speed limit prior to the accident? Explain your reasoning.

No; when  $d = 90$ ,  $s \approx 38$  mph

