

**Algebra 2 Honors**  
**WS: Chapter 5, Part II Review**

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

*All work and answers should be done on separate paper.*

*When necessary, answers should be given as fractions or radicals in simplest form.*

**In 1 – 3, write each expression in radical form, and simplify.**

1.  $216^{\frac{2}{3}}$

2.  $1000^{-\frac{2}{3}}$

3.  $(16x^3)^{\frac{3}{2}}$

**In 4 – 6, write each expression by using rational exponents.**

4.  $\sqrt[5]{(3x)^4}$

5.  $(\sqrt[5]{-6})^3$

6.  $\sqrt[4]{30x^3}$

**In 7 – 22, simplify each expression. Assume all variables are positive.**

7.  $25^{\frac{1}{4}} \cdot 25^{-\frac{7}{4}}$

8.  $\left(\frac{x^8}{y^4}\right)^{\frac{3}{4}}$

9.  $\left(\frac{x^3}{125}\right)^{\frac{1}{3}}$

10.  $(-8x^{18})^{\frac{2}{3}}(\sqrt[3]{y^6})$

11.  $\frac{\sqrt{xy^3z^5}}{\sqrt[4]{x^5y^3z}}$

12.  $(-27x^6)^{\frac{1}{3}}$

13.  $(4x)^{-\frac{1}{2}} \cdot (9x)^{\frac{1}{2}}$

14.  $(\sqrt[3]{-8x^9})^2$

15.  $(3x)^{\frac{2}{3}}(3x)^{\frac{7}{3}}$

16.  $\left(\frac{m^8}{n^{12}}\right)^{-\frac{1}{4}}$

17.  $\sqrt[4]{(2x)^8} \cdot \sqrt[3]{(2x)^6}$

18.  $\sqrt[3]{\frac{x^7}{27x^3}}$

19.  $\frac{3}{2\sqrt{x}-1}$

20.  $\frac{5 + \sqrt[4]{2x^2}}{\sqrt[4]{27x}}$

21.  $\left(\frac{a^{\frac{2}{3}}b^{-1}}{ba^{\frac{1}{5}}}\right)^2$

22.  $\frac{m^{\frac{3}{2}}n \cdot 4mn^{-2}}{6mn^{\frac{1}{4}}}$

**In 23 - 25, graph each function and identify its domain and range.**

23.  $f(x) = -\sqrt{x-4}$

24.  $f(x) = \sqrt[3]{-x} + 1$

25.  $g(x) = \frac{1}{2}\sqrt[3]{x} - 3$

**In 26 - 27, using the graph of  $f(x) = \sqrt{x}$  as a guide, describe the transformation(s).**

26.  $g(x) = 4\sqrt{x+8}$

27.  $g(x) = -\sqrt{3x} + 2$

**In 28 - 30, use the description to write the square root function  $g$ .**

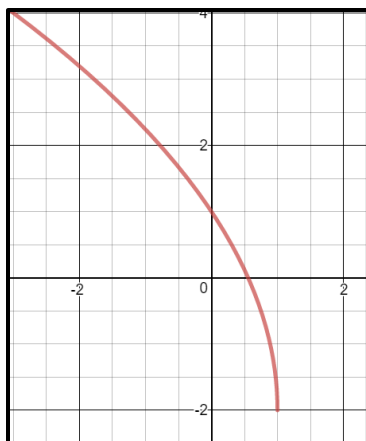
28. The parent function  $f(x) = \sqrt{x}$  is reflected across the  $y$ -axis, vertically stretched by a factor of 7, and translated 3 units down.

29. The parent function  $f(x) = \sqrt{x}$  is translated 2 units right, compressed horizontally by a factor of  $\frac{1}{2}$ , and reflected across the  $x$ -axis.

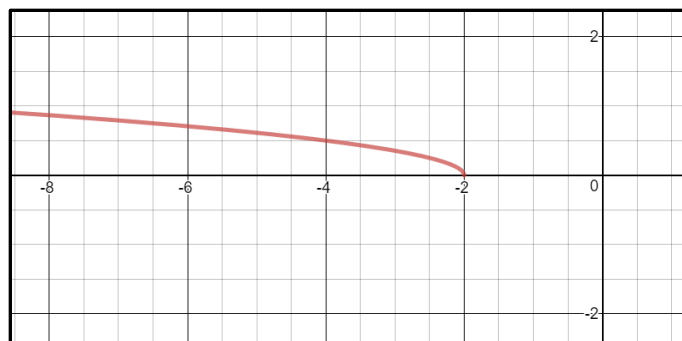
30. The parent function  $f(x) = \sqrt{x}$  is compressed vertically by a factor of  $\frac{1}{4}$ , reflected across the  $x$ -axis, and translated 6 units up.

In 31 - 32, write an equation for the graph shown. Answers may vary.

31.



32.



In 33 - 42, solve each equation.

33.  $\sqrt[3]{4x+1} - 5 = 0$

34.  $\sqrt[4]{10x+11} = 3$

35.  $x + 2 = \sqrt{3x+6}$

36.  $(10x - 25)^{\frac{1}{2}} = x$

37.  $5(6x+1)^{\frac{1}{4}} = 10$

38.  $4(7x+18)^{\frac{1}{2}} = 4x$

39.  $\sqrt{x+2} = 1 + \sqrt{x-3}$

40.  $\sqrt{\sqrt{x-3}} = \sqrt{x-15}$

41.  $\sqrt{x-3} = \frac{2}{\sqrt{x-3}}$

42.  $\sqrt[3]{x+2} = \sqrt[3]{\frac{x}{2} + 5}$

In 43 - 48, solve each inequality. Answers should be given using interval notation.

43.  $\sqrt{x+5} < 4$

44.  $\sqrt{2x+7} - 6 > -1$

45.  $\sqrt{10x} \leq 3\sqrt{x+1}$

46.  $6 - \sqrt{x-4} \geq -2$

47.  $2\sqrt[3]{3x-1} - 4 \geq 0$

48.  $\sqrt{2} - \sqrt{x+6} \leq -\sqrt{x}$