

## Chapter 6 Review Worksheet

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

Evaluate the expression without using a calculator. (Lesson 6.1)

1.)  $256^{3/4}$

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

3.)  $8^{7/3}$

4.)  $\frac{1}{(\sqrt[5]{-32})^{-3}}$

Simplify the expression. Assume all variables are positive. (Lesson 6.2)

5.)  $(25a^{10}b^{16})^{1/2}$

6.)  $\sqrt[5]{\frac{c}{d^8}}$

7.)  $\sqrt[4]{28x^9y^3} \cdot \sqrt[4]{4x^4y^5}$

8.)  $8\sqrt[5]{160} + 2\sqrt[5]{1215}$

9.)  $\frac{81}{\sqrt[6]{81}}$

10.)  $\frac{6xy^{3/4}}{3x^{1/2}y^{1/2}}$

11.)  $\left(\frac{a^{3/4}}{b^{3/4}}\right)^{-8}$

12.)  $4x^{3/7} \cdot 9x^{5/2}$

13.)  $\sqrt[3]{x^{2/5}}$

Let  $f(x) = -3x^{1/3} + 4x^{1/2}$ ,  $g(x) = 5x^{1/3} + 4x^{1/2}$ . Perform the indicated operation and state the domain. (Lesson 6.3)

14.)  $g(x) + f(x)$

15.)  $f(x) - g(x)$

16.)  $g(x) - g(x)$

Let  $f(x) = 4x^{2/3}$ ,  $g(x) = 5x^{1/2}$ . Perform the indicated operation and state the domain. (Lesson 6.3)

17.)  $\frac{f(x)}{g(x)}$

18.)  $g(x) \cdot g(x)$

19.)  $f(x) \cdot g(x)$

Let  $f(x) = 3x^{-1}$ ,  $g(x) = 2x - 7$ , and  $h(x) = \frac{x+4}{3}$ . Perform the indicated operation and state the domain. (Lesson 6.3)

20.)  $g(f(x))$

21.)  $h(g(x))$

22.)  $f(h(x))$

**Find the inverse of the function. (Lesson 6.4)**

23.)  $f(x) = \frac{1}{3}x + 4$

24.)  $y = 4x^2 + 9, x \geq 0$

25.)  $f(x) = x^3 - 4$

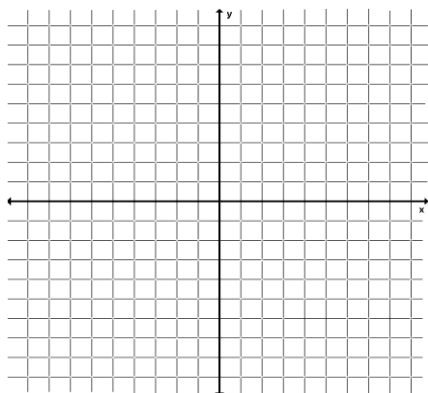
**Verify that  $f$  and  $g$  are inverse functions. (Lesson 6.4)**

26.)  $f(x) = \frac{1}{3}x^3 - 2, g(x) = \sqrt[3]{3x + 6}$

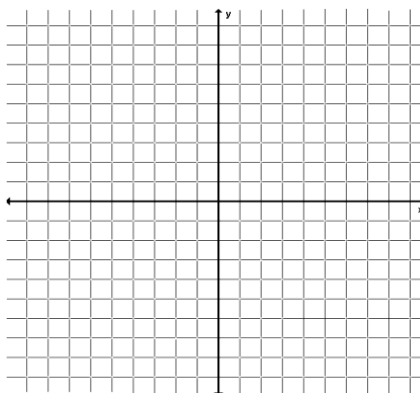
27.)  $f(x) = -2x - 3; g(x) = -\frac{1}{2}x - \frac{3}{2}$

**Graph the function  $f$ . Use the horizontal line test to determine whether the inverse of  $f$  is a function. Then graph the inverse of  $f$ . (Lesson 6.4)**

28.)  $f(x) = -x^2 - 4x + 2$



29.)  $f(x) = \frac{1}{2}x^3 - 4$

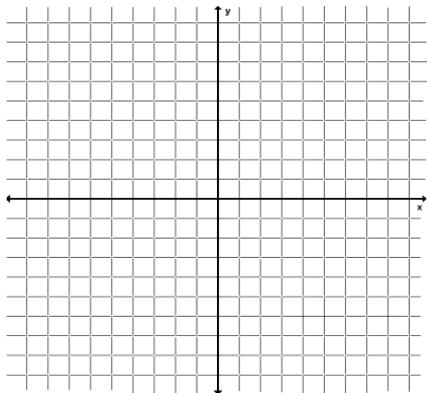


Is  $f^{-1}(x)$  a function? \_\_\_\_\_

Is  $f^{-1}(x)$  a function? \_\_\_\_\_

**Graph the function. Then state the domain and range. Lastly, compare the function with its parent function. (Lesson 6.5)**

30.)  $y = -\sqrt{x+2} + 6$

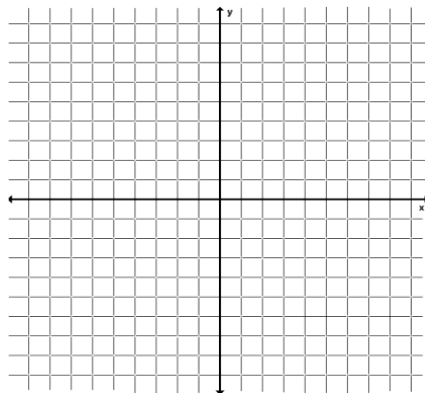


domain: \_\_\_\_\_

range: \_\_\_\_\_

comparison: \_\_\_\_\_

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

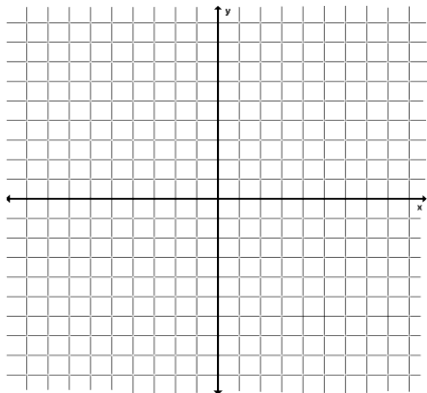


domain: \_\_\_\_\_

range: \_\_\_\_\_

comparison: \_\_\_\_\_

32.)  $y = -\frac{1}{2}\sqrt[3]{x} - 3$

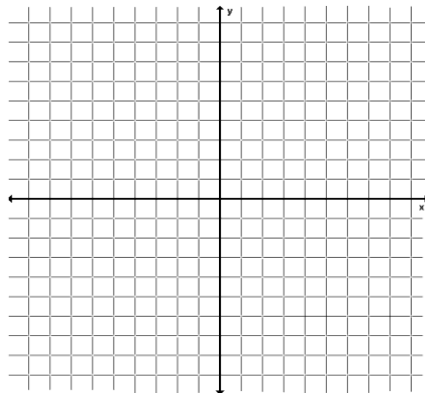


domain: \_\_\_\_\_

range: \_\_\_\_\_

comparison: \_\_\_\_\_

33.)  $y = 3(x+5)^{1/2} - 7$



domain: \_\_\_\_\_

range: \_\_\_\_\_

comparison: \_\_\_\_\_

**Solve the equation. Check for extraneous solutions. (Lesson 6.6)**

34.)  $\sqrt[3]{5x - 4} = 2$

35.)  $3x^{3/4} = 24$

36.)  $-2\sqrt{3x - 9} + 2 = 14$

37.)  $\sqrt{x^2 - 10} = \sqrt{3x}$

38.)  $x - 8 = \sqrt{18x}$

39.)  $\sqrt{x + 6} - 2 = \sqrt{x - 2}$

40.)  $\sqrt{x} + 1 = \sqrt{3x - 3}$