Chapter 6 Review Worksheet

Name: _____

Evaluate the expression without using a calculator.

1.) $36^{3/2}$ 2.) $64^{-2/3}$ 3.) $-(625^{3/4})$ 4.) $(-32)^{2/5}$

Solve the equation. Round your answer to two decimal places when necessary.

5.) $x^4 = 20$ 6.) $x^5 = -10$ 7.) $x^6 + 5 = 26$ 8.) $(x+3)^3 = -16$

Simplify the expression. Assume all variables are positive.

9.) $\dfrac{\sqrt[4]{96x^3y^6}}{\sqrt[4]{4y^2}}$ 10.) $\dfrac{\sqrt[4]{32}}{\sqrt[4]{2}}$ 11.) $x^{5/3} \bullet x^{4/3}$

12.) $\left(\dfrac{x^2}{27}\right)^{1/3}$ 13.) $\dfrac{x^{7/5}}{x^{4/5}}$ 14.) $\sqrt{x^3y^4z} \bullet \sqrt{xyz^4}$

15.) $\sqrt[3]{81} - \sqrt[3]{24}$ 16.) $5\sqrt[3]{48} - \sqrt[3]{750}$ 17.) $\sqrt[3]{\dfrac{1}{6}}$

Let $f(x) = 4x^2 - x$ and $g(x) = 2x^2$. Perform the indicated operation and state the domain.

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

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

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

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

22.) $f\big(g(x)\big)$

23.) $g\big(f(x)\big)$

24.) $f\big(f(x)\big)$

25.) $g\big(g(x)\big)$

Find the inverse of the function.

26.) $f(x) = -\frac{1}{3}x + 5$

27.) $f(x) = -\frac{2}{9}x^5$

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

29.) $f(x) = 9x^4 - 49, x \leq 0$

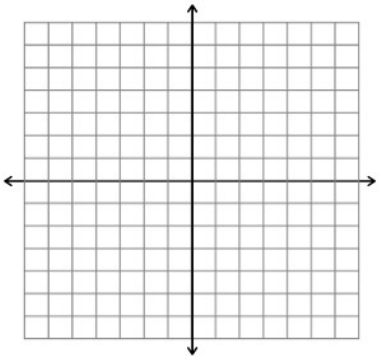
Verify that *f* and *g* are inverse functions.

30.) $f(x) = 3x - 9;\ g(x) = \frac{x+9}{3}$

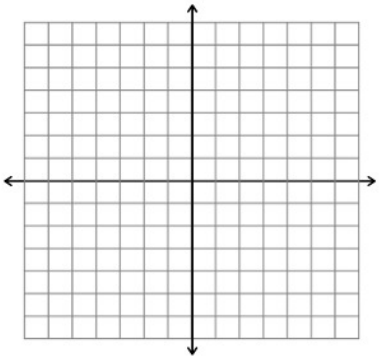
31.) $f(x) = 5x^3;\ g(x) = \sqrt[3]{\frac{x}{5}}$

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*.

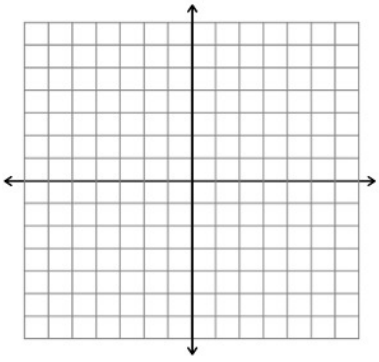
32.) $f(x) = 3x + 1$



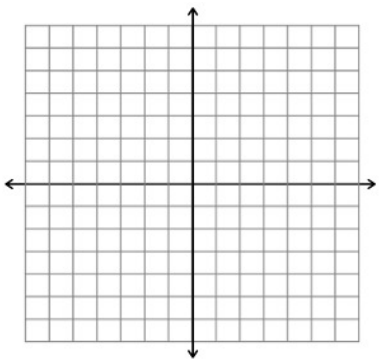
33.) $f(x) = \frac{1}{4}x^2 - 1$



34.) $f(x) = x^3 - 2$

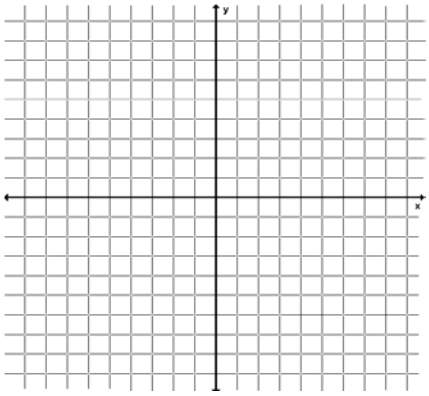


35.) $f(x) = |x| + 4$



Graph the function. Then state the domain and range. Lastly, compare the function with its parent function.

36.) $y = -4\sqrt{x} + 2$

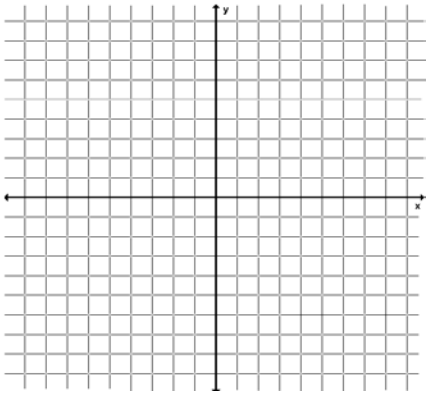


domain: _____

range: _____

comparison:

37.) $y = -3\sqrt[3]{x}$

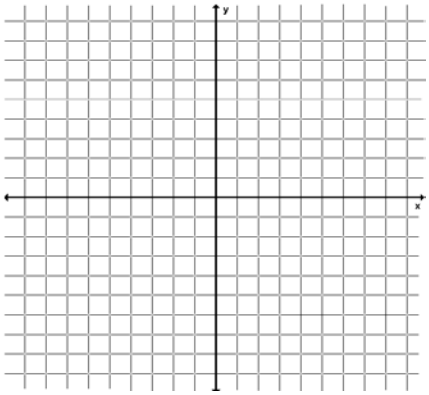


domain: _____

range: _____

comparison:

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

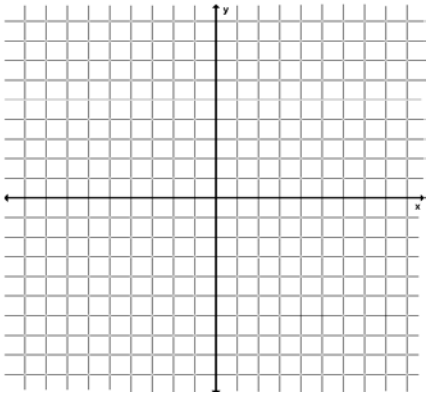


domain: _____

range: _____

comparison:

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



domain: _____

range: _____

comparison:

Solve the equation. Remember that you can check your solution.

40.) $\sqrt{6x+15} = 9$

41.) $\sqrt[3]{3x+5} + 2 = 5$

42.) $8(10x)^{1/2} - 7 = 9$

43.) $2x^{5/3} + 4 = -60$

Solve the equation. Check for extraneous solutions.

44.) $\sqrt[3]{4x-9} = \sqrt[3]{2x-4}$

45.) $x - 3 = \sqrt{10x-54}$