

**7.1 Roots and Exponents.** Evaluate each of the following, round to the *hundredth*, if necessary.

1.  $64^{\frac{2}{3}}$       2.  $9^{\frac{3}{2}}$       3.  $17^{\frac{3}{5}}$       4.  $81^{\frac{3}{4}}$       5.  $9^{\frac{51}{102}}$       6.  $(\sqrt[3]{8})^2$       7.  $25^{-\frac{3}{2}}$

Solve for X.

8.  $2x^3 = 54$       9.  $6x^3 = -1296$       10.  $x^3 - 14 = 22$       11.  $2(x - 4)^2 = 162$

**7.2 Exponents.** Simplify each of the following.

12.  $x^{3/5} \cdot x^{1/7}$       13.  $\frac{a^{3/7}}{a^{2/9}}$       14.  $\frac{1}{e^{1/3}}$       15.  $\frac{18^x}{9^x}$       16.  $y^{2/3} \cdot y^{1/4}$

17.  $\sqrt{50} + 8\sqrt{2}$       18.  $\frac{3}{\sqrt[5]{2}}$       19.  $\sqrt[4]{8} \cdot \sqrt[4]{2}$       20.  $\sqrt[4]{\frac{x^8}{y^{20}}}$       21.  $\sqrt[4]{8}$

22.  $\sqrt[4]{16a^9b^{11}c^{22}}$

23.  $\sqrt{\frac{20A^3B}{5A^5B^5}}$

**7.3 Functions**  $f(x) = 2x + 6$

$g(x) = x^2 - 1$

$h(x) = \frac{8}{x - 4}$

24. What is the domain for  $h(x)$ ?

25. What is the domain for  $f(x)$ ?

27. Find  $f(g(x))$

27. Find  $g(f(x))$

28. Find  $(f + g)(x)$

29. Find  $f(x) \times g(x)$

30. What is the domain for each of the following

$y = x^{7/9}$

$y = x^{3/4}$

$y = \frac{8}{x - 2}$

$y = \frac{x - 2}{8}$

$y = 3x + 2$



31. If  $f(x) = x^{3/5}$  and  $g(x) = 2x^{1/3}$ , find

$$f(x) \times g(x)$$

$$f(g(x))$$

$$g(f(x))$$

#### 7.4 Inverses

32. Find the inverse for the relation  $g(x) = 3\sqrt{x+7}$

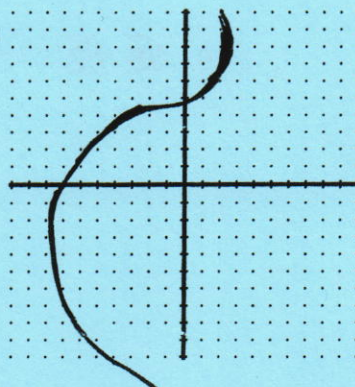
33. Find the inverse for the relation  $f(x) = 2x^{3/5} + 1$

34. Show that  $f(x) = 2x - 12$  and  $g(x) = \frac{1}{2}x + 6$  are inverses.

35a) Sketch the inverse of the graph shown here

b) Is this relation a function?

c) Is the inverse a function?



#### 7.5 Graphs of square and cube roots. Sketch the graphs of each of the following

36.  $f(x) = 3\sqrt{x+4} - 5$

37.  $f(x) = -2\sqrt{x-2} + 6$

38.  $f(x) = \sqrt[3]{x+7} + 2$

39.  $f(x) = 4\sqrt[3]{x-11} - 15$