Name: _____   Date: _____

Chapter 8 Prerequisite Skills

1. How are $\sqrt{-9}$ and $\sqrt[3]{-27}$ the same? How are they different?

2. Between which two consecutive whole numbers does the value of each root fall? Which number is it closer to?

   a) $\sqrt{8}$ **b)** $\sqrt{132}$

   c) $\sqrt[3]{9}$ **d)** $\sqrt[3]{100}$

3. Identify two rational numbers with square roots between 8 and 9.

4. Identify the base and the exponent in each of the following powers. Evaluate each power where possible.

   a) 3^4 **b)** $(-4)^5$

   c) x^7 **d)** $(3x)^{\frac{1}{2}}$

   e) 13^1 **f)** $\left(\dfrac{2}{3}\right)^{-3}$

   g) $1.78^{2.1}$

5. Calculate.

   a) $\sqrt{196}$ **b)** $\sqrt[3]{4096}$

   c) $\sqrt[3]{9261}$ **d)** $\sqrt[3]{3375}$

   e) $\sqrt{961}$ **f)** $\sqrt[3]{4913}$

6. Write each expression as powers without parentheses. Then, evaluate each expression.

   a) $(-4^3)^2$ **b)** $(7 \times 3)^4$

   c) $\left(\dfrac{5}{6}\right)^4$ **d)** $[(-3) \times 4]^3$

7. Determine the value of each expression.

   a) $7 - 2(3^2)$ **b)** $(-4 - 3)^2 + (-3)^2$

   c) $(-2)^6 \div 4^3$ **d)** $24 - 2^2 + (7^2 - 5^2)$

8. For each table, plot the ordered pairs (x, y) and the ordered pairs (y, x). State the domain of the function and its inverse.
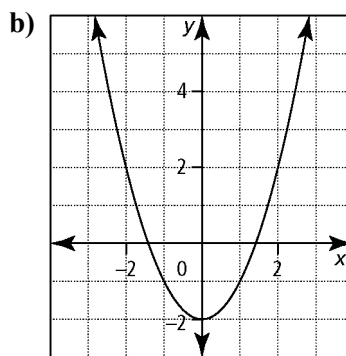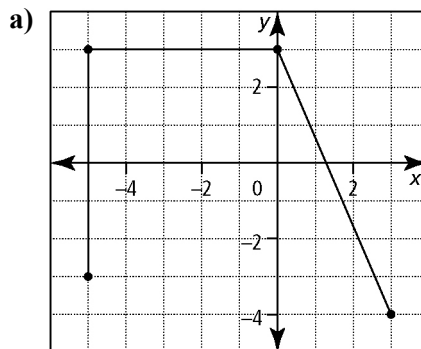
   a)

x	y
−2	−4
−1	−2
0	0
1	2
2	4

   b)

x	y
−6	2
−4	4
−1	5
2	5
5	3

9. Sketch the inverse of each graph of a relation.

   a)

   b)

10. Determine algebraically the equation of the inverse of each function.

   a) $f(x) = 3x$ **b)** $f(x) = -3x + 4$

   c) $f(x) = \dfrac{x+4}{3}$ **d)** $f(x) = \dfrac{x}{3} - 5$

   e) $f(x) = 1 - 2.5x$ **f)** $f(x) \dfrac{1}{2}(x + 6)$

11. For each of following functions,
- determine the equation for the inverse, $f^{-1}(x)$
- sketch the graph $f(x)$ and $f^{-1}(x)$
- state the domain and range of $f(x)$ and $f^{-1}(x)$

   a) $f(x) = 2x + 3$

   b) $f(x) = 5 - 3x$

   c) $f(x) = \dfrac{1}{2}(x - 6)$

   d) $f(x) = x^2 + 3,\ x \le 0$

   e) $f(x) = 1 - x^2,\ x \ge 0$

   f) $f(x) = (x + 3)^2,\ x \ge -3$