Pre-Calculus 30
Chapter 2: Radical Functions Review

Name: _____

1. Write the equation of a radical function that would result by applying each set of transformations to the graph of √f(x)   .

   a) vertical stretch by a factor of 3, and horizontal stretch by a factor of 2

   b) horizontal reflection in the *y*-axis, translation up 3 units, and translation left 2 units

   c) vertical reflection in the *x*-axis, horizontal stretch by a factor of $\frac{1}{3}$, and translation down 7 units

   d) vertical stretch by a factor of 5, horizontal stretch by a factor of 0.25, and translation right 6 units

2. Sketch the graph of the following function using transformations.

$$y - 5 = \sqrt{2(x+3)}$$
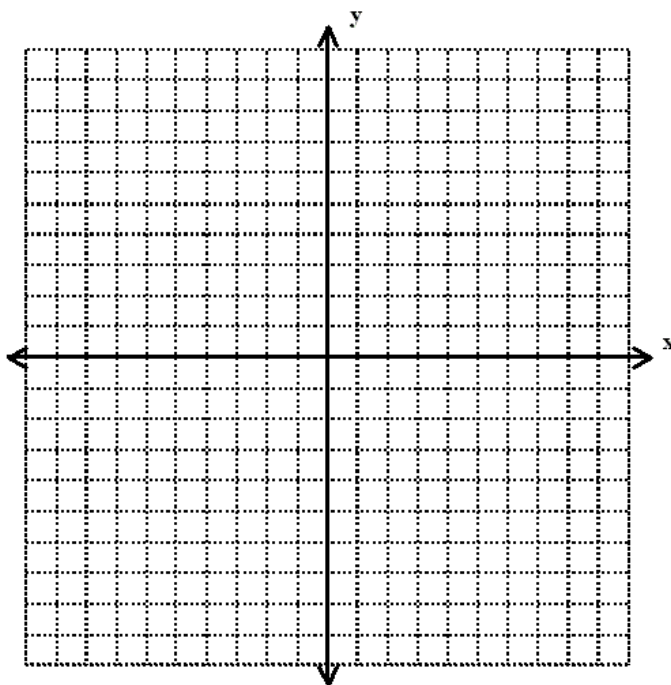
3. State the domain and range of each function.
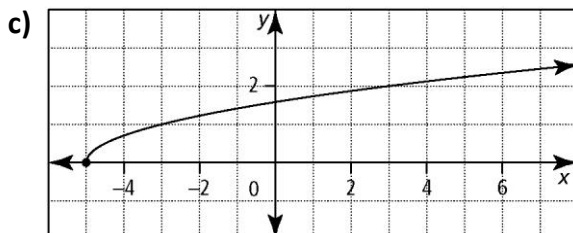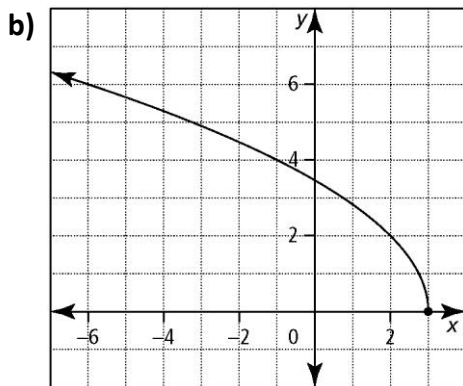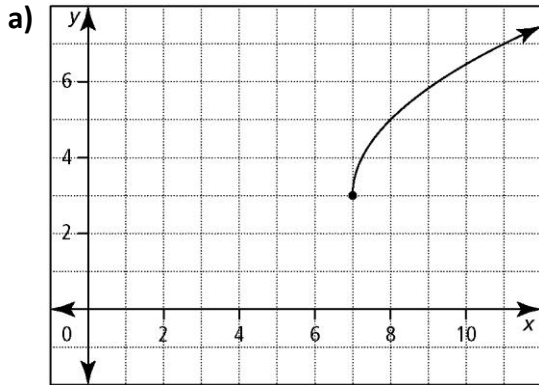
a) $y = \sqrt{-x} - 4$

b) $y = 4\sqrt{x-4}$

c) $y - 4 = -\sqrt{x-4}$

d) $y = -\sqrt{4x}$

4. For each function, write an equation of a radical function of the form $y = a\sqrt{b(x-h)} + k$.

a)

b)

c)

5. Explain how to transform the graph of $y = \sqrt{x}$ to obtain the graph of each function.
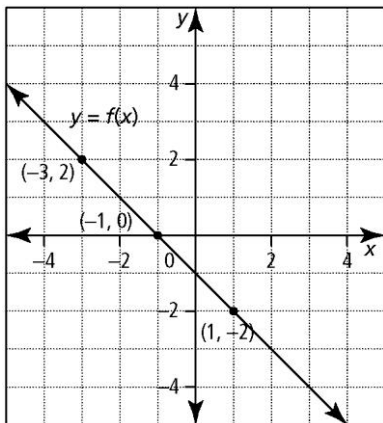
a) $y = \sqrt{2x-6} + 5$

b) $y - 7 = \sqrt{5-x}$

6. Determine the domains and ranges of each pair of functions. Explain why the domains and ranges differ.

a) $y = x + 5$, $y = \sqrt{x+5}$

b) $y = x^2 - 9$, $y = \sqrt{x^2 - 9}$

7. Using the graph of $y = f(x)$, sketch the graph of $y = \sqrt{f(x)}$.

8. Solve.

    a) $x + 3 = \sqrt{2x^2 - 7}$ **b)** $x = \sqrt{x + 10} + 2$

9. The radius, *r*, of a sphere is related to the surface area, *A*, by the equation $r = \dfrac{1}{2}\sqrt{\dfrac{A}{\pi}}$.

    a) The surface area of a baseball is about 172 cm². Find the radius of a baseball, to the nearest tenth of a centimetre.

    b) The radius of a tennis ball is about 3.3 cm. Find the surface area, to the nearest square centimetre.

10. Solve.

$\sqrt{x + \sqrt{x - 2}} = 2$