Name _____ Date _____

In Exercises 1–6, graph the function. Identify the domain and range of the function.

1. $g(x) = \sqrt{x} + 4$

2. $h(x) = \sqrt{x} - 2$

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

4. $h(x) = \sqrt[3]{-2x}$

5. $f(x) = \frac{1}{3}\sqrt{x} - 2$

6. $g(x) = \frac{1}{4}\sqrt{x} + 5$

In Exercises 7–12, describe the transformation of *f* represented by *g*. Then graph each function.

7. $f(x) = \sqrt{x}; g(x) = \sqrt{x - 1} + 4$

8. $f(x) = \sqrt{x}; g(x) = 3\sqrt{x} + 2$

9. $f(x) = \sqrt[3]{x}; g(x) = -2\sqrt[3]{x}$

10. $f(x) = \sqrt[3]{x}; g(x) = \sqrt[3]{x - 1} + 3$

11. $f(x) = x^{1/2}; g(x) = 3(-x)^{1/2}$

12. $f(x) = x^{1/3}; g(x) = -\frac{1}{3}x^{1/3}$

In Exercises 13–15, use a graphing calculator to graph the function. Then identify the domain and range of the function.

13. $f(x) = \sqrt{x^2 - x}$

14. $g(x) = \sqrt[3]{x^2 - x}$

15. $h(x) = \sqrt[3]{2x^2 + 3x}$

In Exercises 16 and 17, write a rule for *g* described by the transformations of the graph of *f*.

16. Let g be a vertical shrink by a factor of $\frac{1}{3}$, followed by a translation 3 units right of the graph of $f(x) = \sqrt{x + 5}$.

17. Let g be a reflection in the x-axis, followed by a translation 2 units down of the graph of $f(x) = 5\sqrt{x} + 3$.

In Exercises 18 and 19, use a graphing calculator to graph the equation of the parabola. Identify the vertex and the direction that the parabola opens.

18. $\frac{1}{2}y^2 = x$

19. $-3y^2 = x + 6$

In Exercises 20 and 21, use a graphing calculator to graph the equation of the circle. Identify the center, radius, and intercepts.

20. $x^2 + y^2 = 16$

21. $25 - (y - 2)^2 = x^2$