4. Complete the table to describe the effect of each transformation on the inverse of the quadratic function.

Transformation of Quadratic Function, $f(x)$	Transformation of Inverse Function, $f^{-1}(x)$
translation up D units	
translation down D units	
translation right C units	
translation left C units	

5. **Write the equation for the inverse of each quadratic function and identify the appropriate domain restrictions. Then, describe the domain and range of each function and its inverse without graphing the functions.**

a. $f(x) = x^2 - 2$

b. $f(x) = (x + 2)^2$

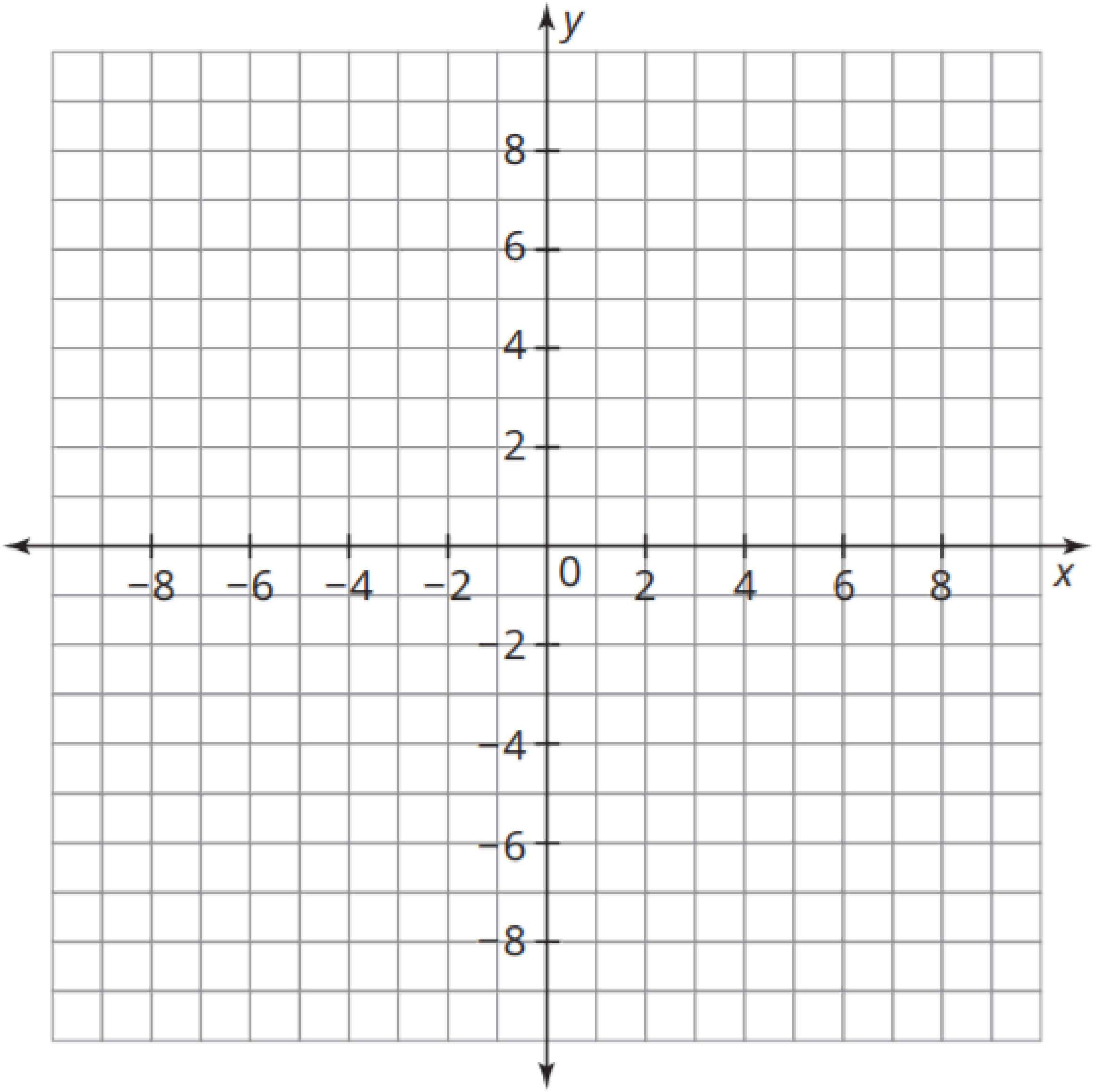
ACTIVITY 2.3 The Cube Root Function

The **cube root function** is the inverse of the power function $f(x) = x^3$ and can be written as $f^{-1}(x) = \sqrt[3]{x}$.

1. The table shows several coordinates of the function $c(x) = x^3$.

a. Use these points to graph the function and the inverse of the function, $c^{-1}(x)$.

x	$c(x) = x^3$
−2	−8
−1	−1
0	0
1	1
2	8



b. Explain how you determined the coordinates for the points on the inverse of the function.

c. What point or points do the two graphs have in common? Why?

2. **Why is the symbol ± not written in front of the radical to write the inverse of the function $c(x) = x^3$?**

3. **Why do you not need to restrict the domain of the function $c(x) = x^3$ to write the inverse with the notation $c^{-1}(x)$?**

4. Describe the key characteristics of each function:

Function: $c(x) = x^3$

Domain: ______________

Range: ______________

x-intercept(s): ______________

y-intercept(s): ______________

Inverse function: $c^{-1}(x) = \sqrt[3]{x}$

Domain: ______________

Range: ______________

x-intercept(s): ______________

y-intercept(s): ______________

5. Does the inverse function $c^{-1}(x) = \sqrt[3]{x}$ have an asymptote? Explain your reasoning.

The inverses of power functions with exponents greater than or equal to 2, such as the square root function and the cube root function, are called **radical functions**. Radical functions are used in many areas of science, including physics and computer science.