

**4. Analyze each function.**

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$f(x) = x$	$g(x) = \frac{3x}{2}$	$h(x) = \frac{\sqrt{x}}{2x}$
$p(x) = \frac{3}{x} + 2$	$k(x) = 12$	$n(x) = \frac{2^x}{5}$
$j(x) = \frac{4x^2 + 3x + 2}{6x^3 + 10}$	$m(x) = \frac{1}{(x + 2)(x - 3)}$	

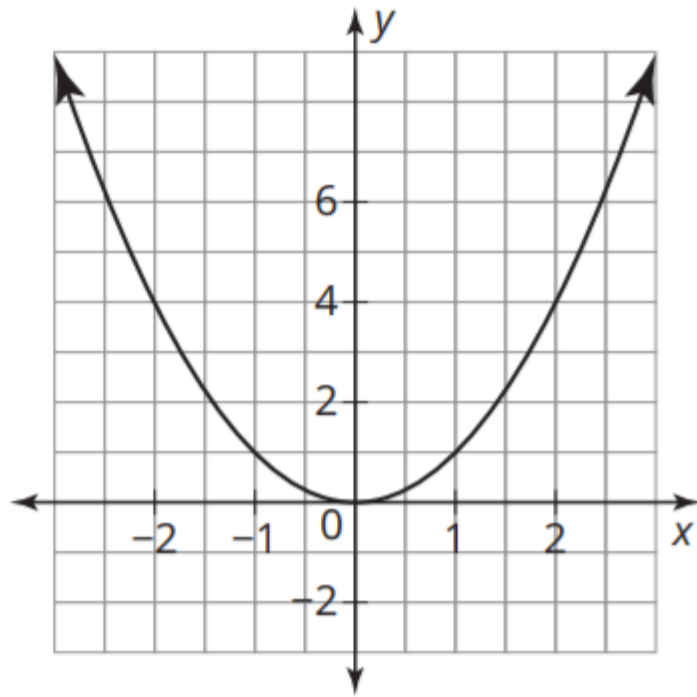
**a. Circle the rational functions.**

**b. Explain why the remaining functions are not rational.**

**c. Do you think the graphs of all rational functions will have a vertical asymptote? Explain your reasoning.**

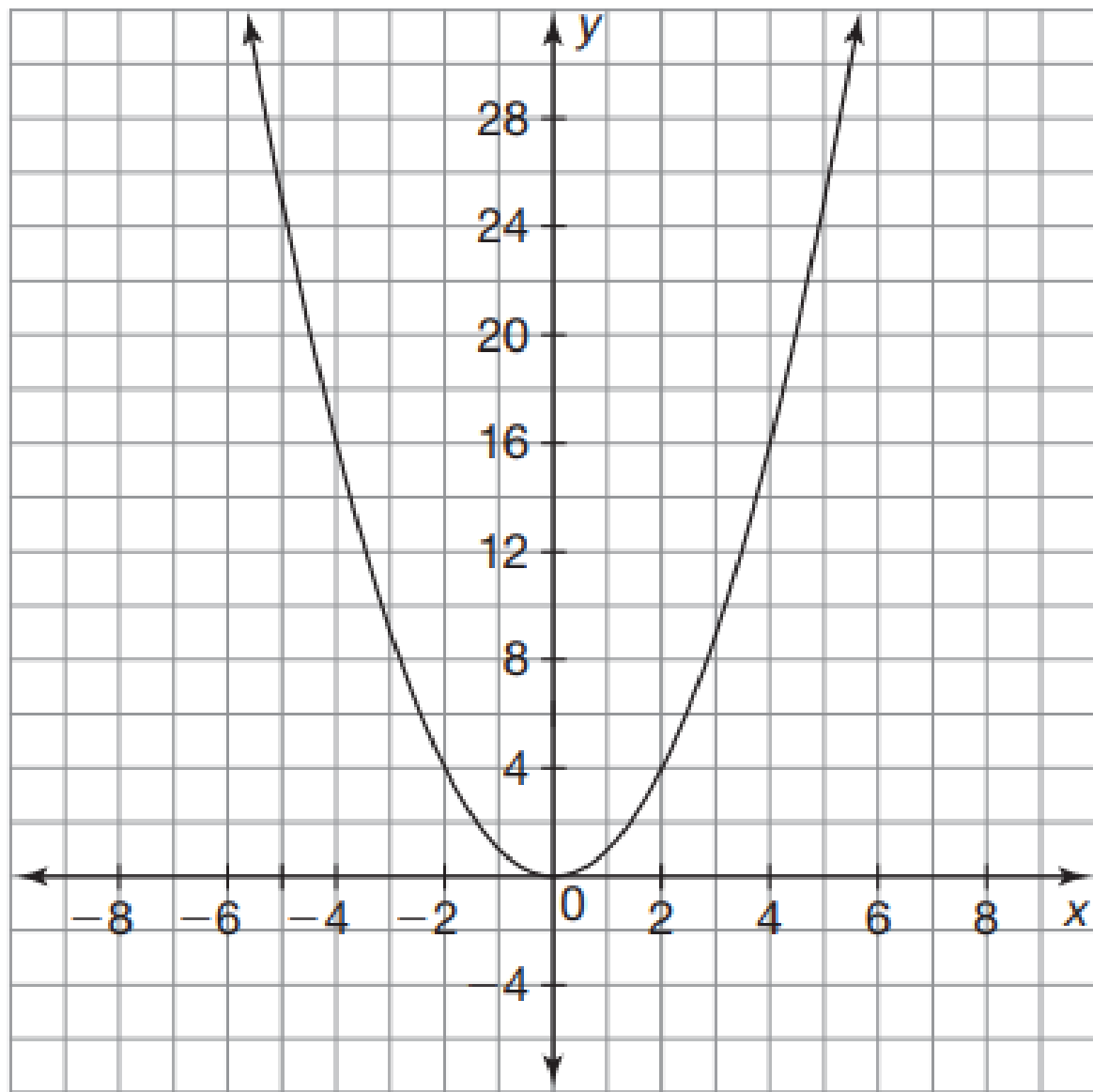
1. Analyze the graph of the quadratic power function  $q(x) = x^2$ .

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Predict the graph of  $r(x) = \frac{1}{x^2}$ . Sketch it on the coordinate plane. Explain your reasoning.





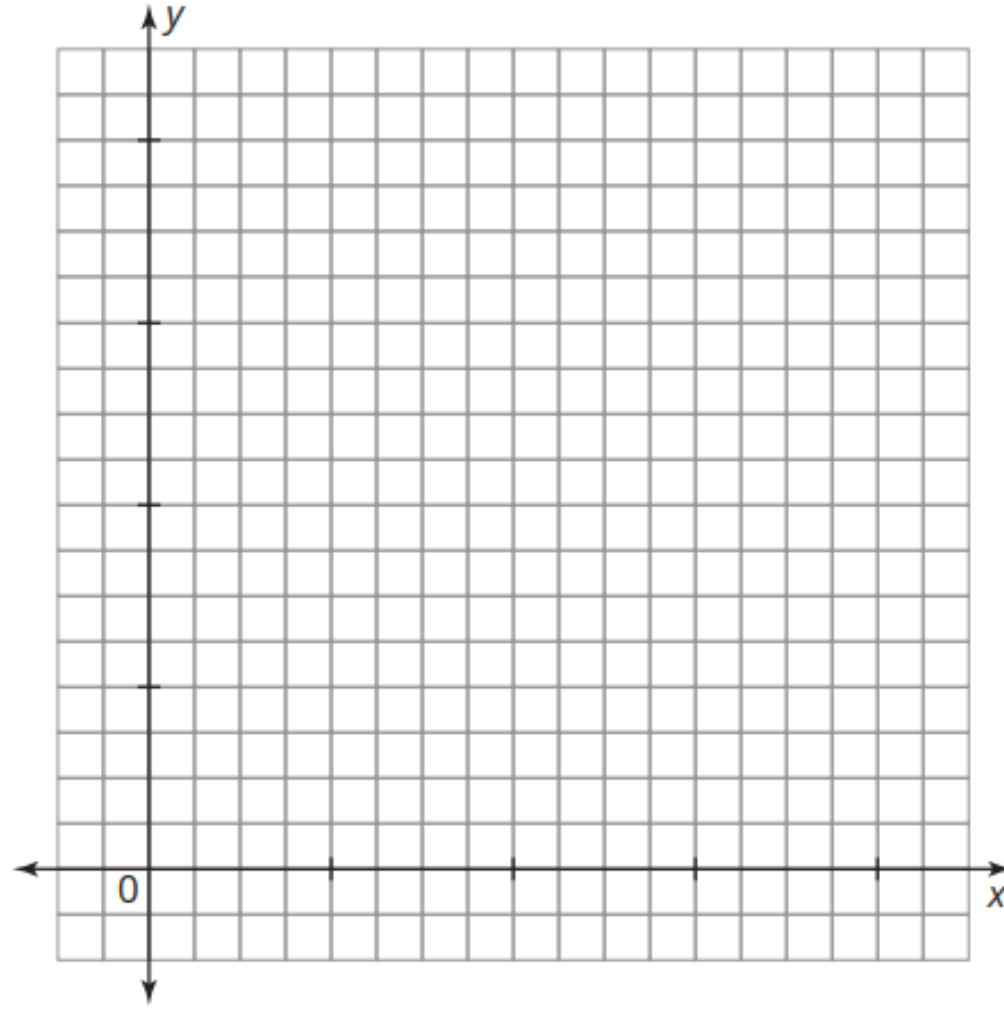
3. Analyze the key characteristics of  $r(x)$ .
  - a. Describe the domain and range of  $r(x)$ . Use interval notation.
  - b. Describe the end behavior of  $r(x)$ .
  - c. Describe the horizontal and vertical asymptotes of  $r(x)$ . How can you determine the asymptotes from the graph, table, and equation?

Suppose you want to purchase a new laptop which will cost \$2200.

- Complete the table to show the amount of time it would take to save \$2200 for different weekly savings amounts.**

Weekly Savings (dollars)	Time (weeks)
10	
20	
40	
50	
100	

2. Use the information in the table to construct a graph of the problem situation. Be sure to label the axes.





**3. Can this problem situation be modeled by a function?**

**Explain your reasoning.**

**4. Write an algebraic equation to model this problem situation.**

**5. Describe the asymptotic behavior of the graph in this situation.**

**a. What happens to the graph as  $x$  approaches zero?**

**b. What happens to the graph as  $x$  approaches infinity?**