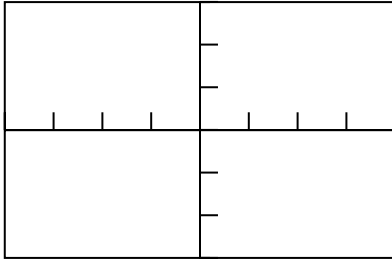


**1.2–1.6 Concepts Worksheet****Graphical Analysis**

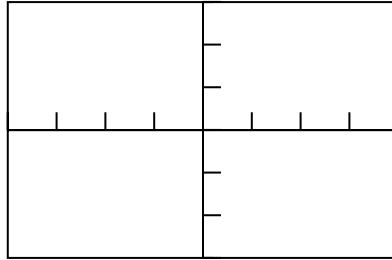
Chapter 1 deals with functions and their graphical characteristics. To facilitate a study of functions, it is important to visualize mentally the graph of a function when given an algebraic description.

1. Graph each function. Clearly indicate units on the axes provided.

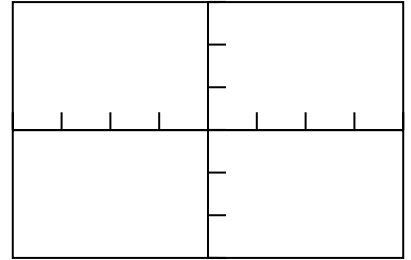
(a)  $f(x) = x^2$



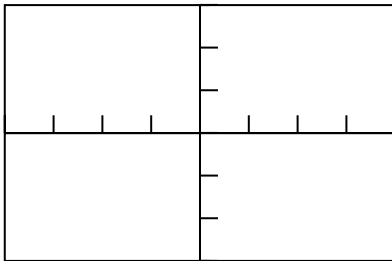
(b)  $f(x) = x^3$



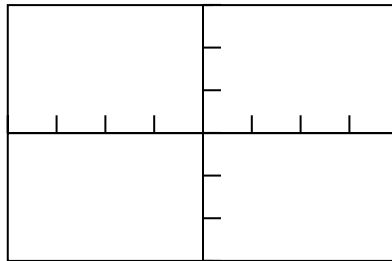
(c)  $f(x) = |x|$



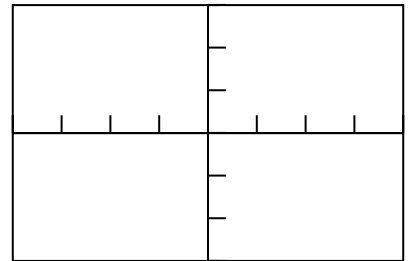
(d)  $f(x) = \sin x$



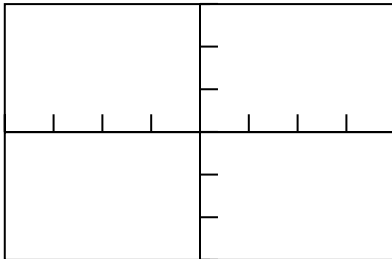
(e)  $f(x) = \cos x$



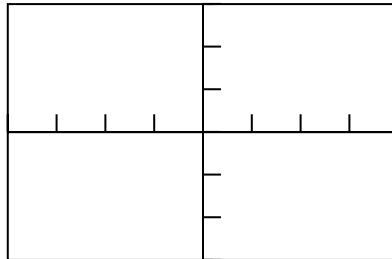
(f)  $f(x) = \tan x$



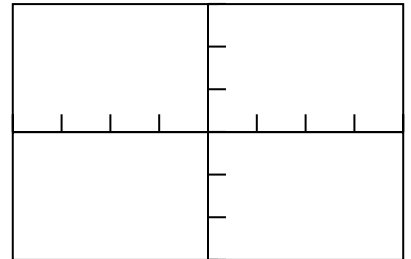
(g)  $f(x) = \sec x$



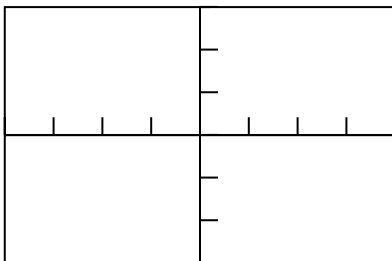
(h)  $f(x) = 2^x$



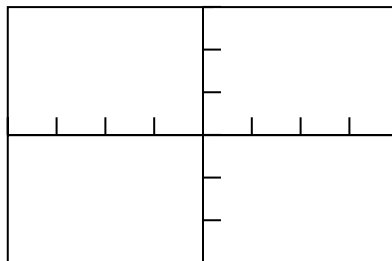
(i)  $f(x) = \log_2 x$



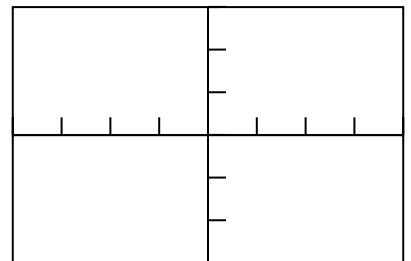
(j)  $f(x) = \frac{1}{x}$



(k)  $f(x) = \sqrt{x}$



(l)  $f(x) = \sqrt{a^2 - x^2}$



# 1.2–1.6 Concepts Worksheet

NAME \_\_\_\_\_

Continued

2. Answer the following questions about the indicated functions. In completing the table below, you may use the following abbreviations,  $R$ : the set of real numbers,  $J$ : the set of integers, and  $N$ : the set of natural numbers. Note: This exercise may need to be done as appropriate sections of Chapter 1 are completed.

Function	Domain	Range $y = f(x)$	Zeros (Find $x$ when $f(x) = 0$ )	Symmetry with respect to $y$ -axis or origin	Even or Odd Function— $f(-x) = f(x)$ or $f(-x) = -f(x)$	Is the function periodic? If so, state the period.	Is $f(x)$ a one-to-one function? (For each $f(x)$ only one $x$ exists)
(a) $f(x) = x^2$							
(b) $f(x) = x^3$							
(c) $f(x) =  x $							
(d) $f(x) = \sin x$							
(e) $f(x) = \cos x$							
(f) $f(x) = \tan x$							
(g) $f(x) = \sec x$							
(h) $f(x) = 2^x$							
(i) $f(x) = \log_2 x$							
(j) $f(x) = \frac{1}{x}$							
(k) $f(x) = \sqrt{x}$							
(l) $f(x) = \sqrt{a^2 - x^2}$							

*Continued*

### Concept Connectors

3. Is there a relationship between symmetry in a function's graph and the function's being even or odd? Explain.

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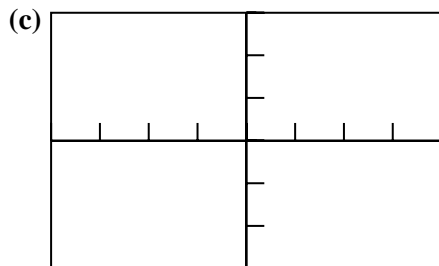
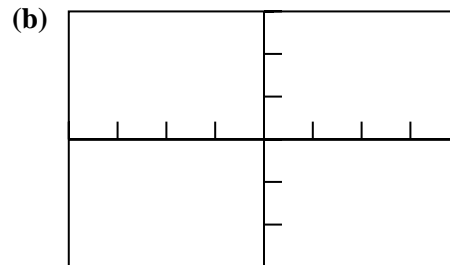
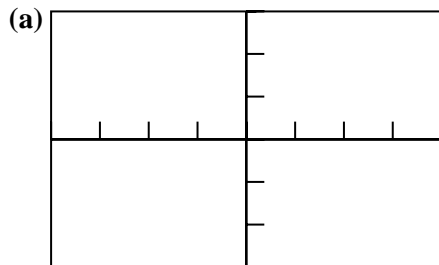


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4. Draw a reflection of (a)  $f(x) = \sin x$ , (b)  $f(x) = 2^x$  and (c)  $f(x) = \sqrt{x}$  through the  $x$ -axis.



5. Draw a reflection of (a)  $f(x) = \sin x$ , (b)  $f(x) = 2^x$  and (c)  $f(x) = \sqrt{x}$  through the  $y$ -axis.

