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Piecewise Functions and Graphs of Basic Functions

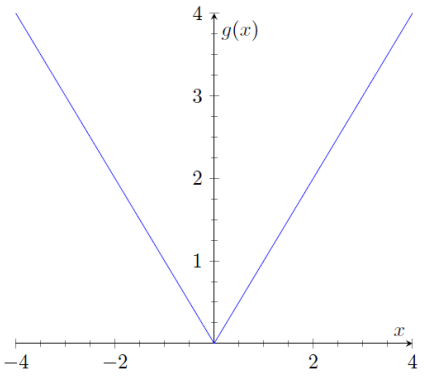
Learning Objectives

- Define and graph six basic functions
- Graph piecewise-defined functions
- Evaluate piecewise-defined functions

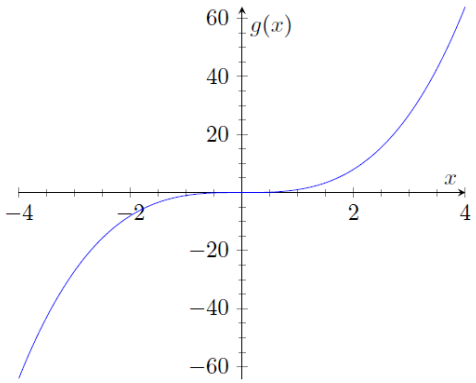
Define and graph six basic function

1. Associate each of the follow basic functions to their corresponding graphs.
    a. $f(x) = x$
    b. $g(x) = x^2$
    c. $h(x) = x^3$
    d. $F(x) = |x|$
    e. $G(x) = \frac{1}{x}$
    f. $H(x) = \sqrt{x}$

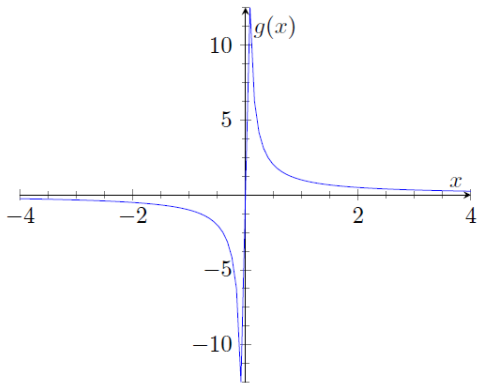
A.



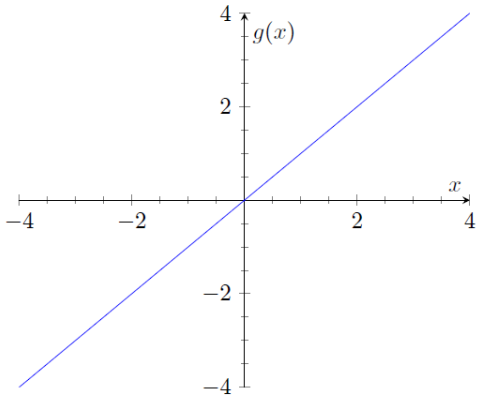
B.



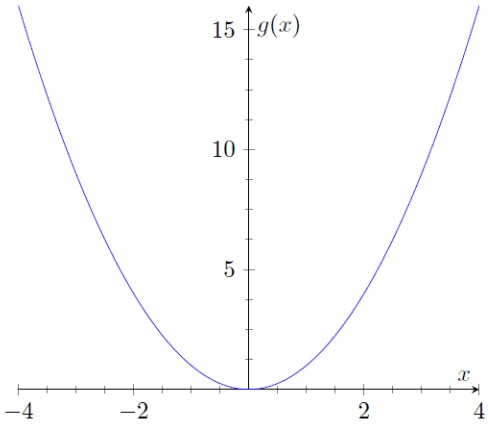
C.



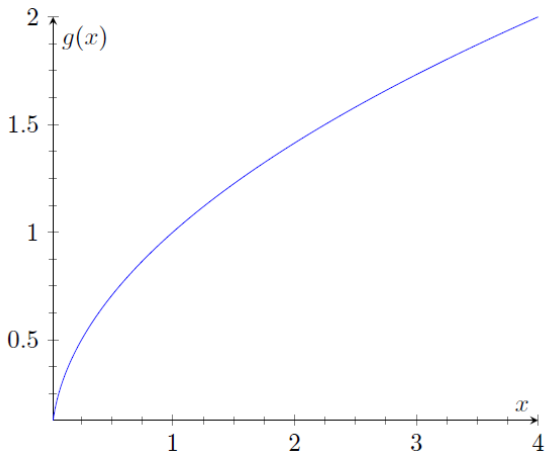
D.



E.



F.



Graph piecewise-defined functions

2. Graph the function $f(x) = \begin{cases} 2x + 3, x < 1 \\ 6 - x^2, \ x \geq 1 \end{cases}$

Evaluate piecewise-defined functions

3. Consider the piecewise-defined function $f(x) = \begin{cases} -x + 1, x < -1 \\ 4, \quad\quad x = -1 \\ x + 3, \quad x > -1 \end{cases}$. Evaluate each of the following expressions:

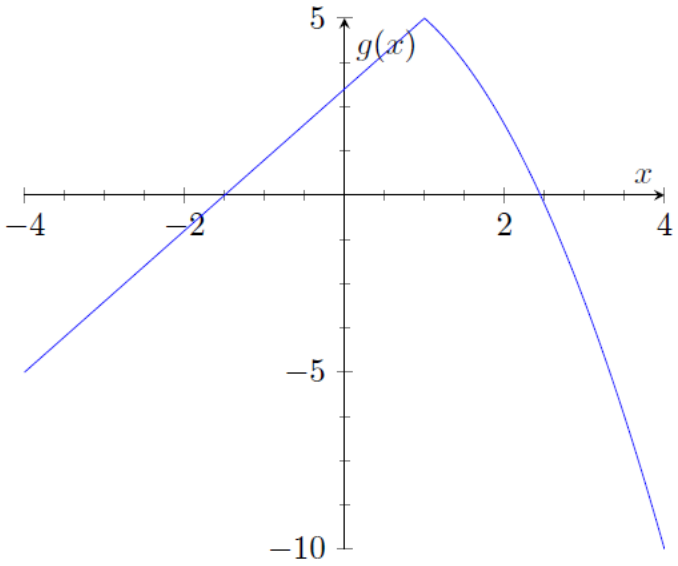
   a. $f(-2)$

   b. $f(-1)$

   c. $f(1)$

ANSWER KEY

1. a=D, b=E, c=B, d=A, e=C, f=F



2.

3. a. $f(-2) = 3$, b. $f(-1) = 4$, c. $f(1) = 4$