

## 7 Graphing Functions

### Concepts:

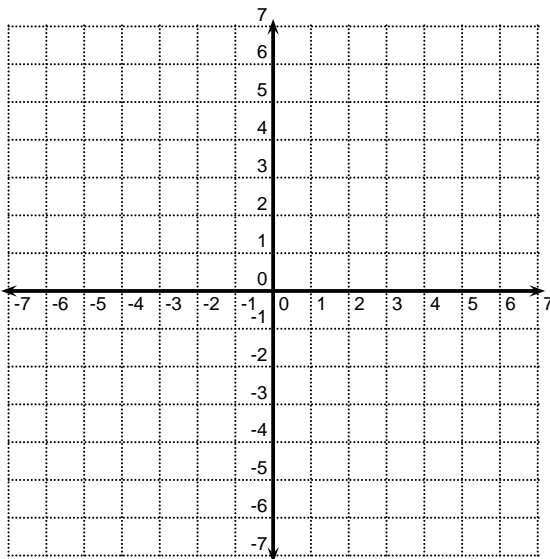
- The Domain of a Function
- Graphs of Functions
  - Identifying Graphs of Functions (Vertical Line Test)
  - Interpreting Graphs of Functions
  - Sketching Graphs of Functions
  - Relative Maximums and Minimums

**You are responsible for graphs of basic functions.** You will need to know how to graph some basic functions without the help of your calculator.

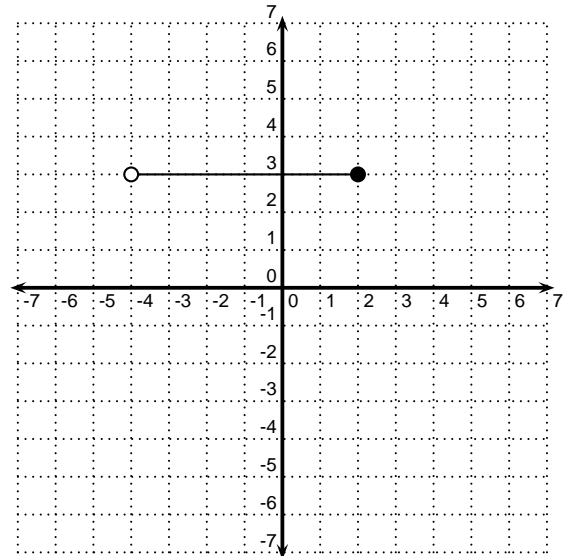
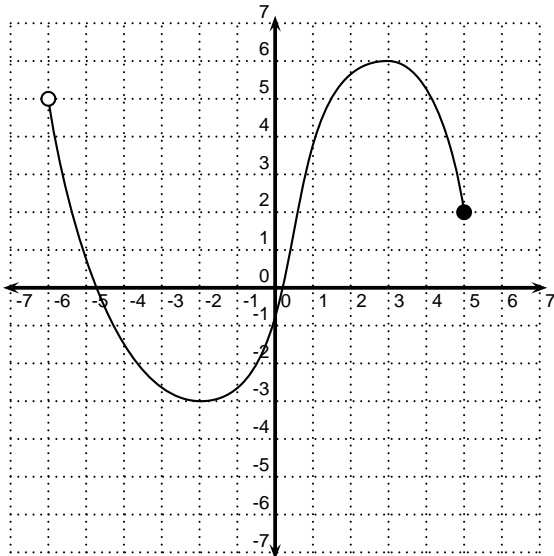
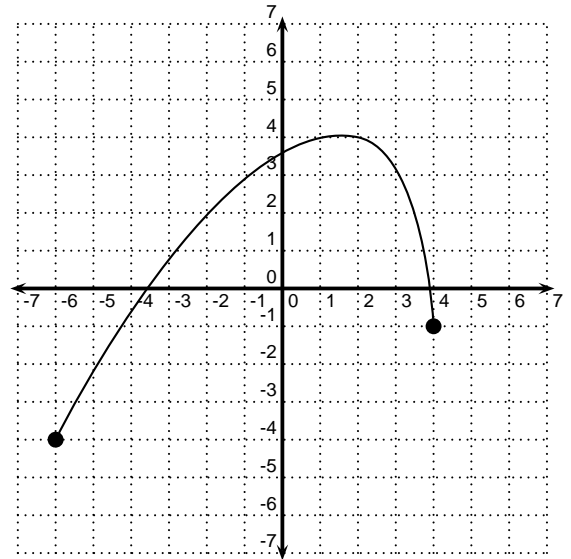
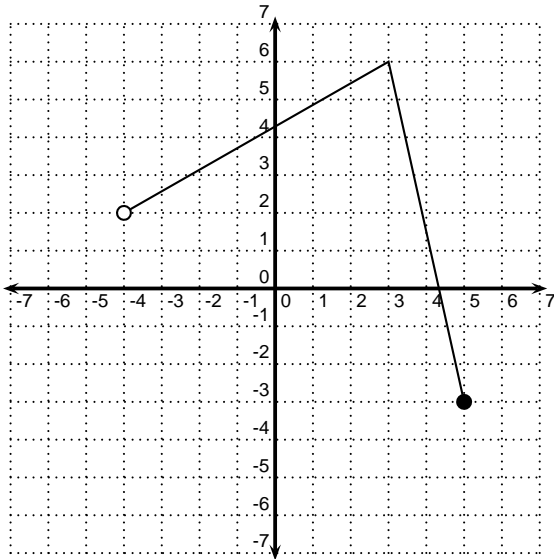
- Linear Functions ( $f(x) = mx + b$ )
- Power Functions ( $f(x) = x^n$ ) where  $n$  is a positive integer.
- Square Root Function ( $f(x) = \sqrt{x}$ )
- Greatest Integer Function ( $f(x) = \llbracket x \rrbracket$ )
- Absolute Value Function ( $f(x) = |x|$ )
- Piecewise-defined Functions.

### (Section 3.3)

1. Sketch the graph of  $g(x) = |x + 2|$ .

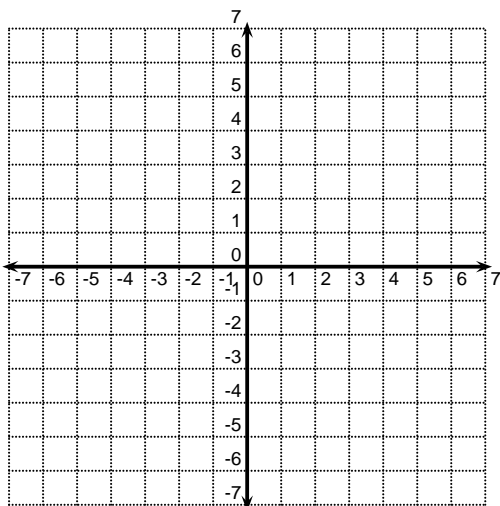


2. Find the domain and range of each of the following functions.

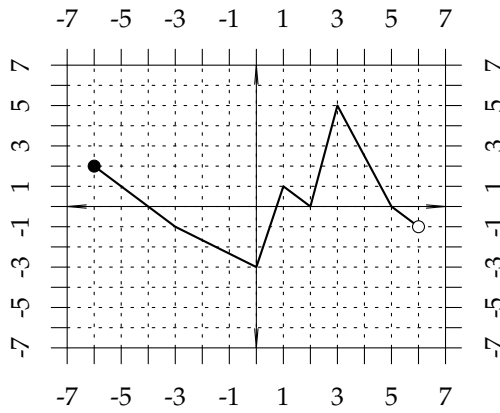


3. Sketch the graph of

$$f(x) = \begin{cases} 3x - 2 & \text{if } x \leq -3 \\ -x^2 + 4 & \text{if } x > -3 \end{cases}$$

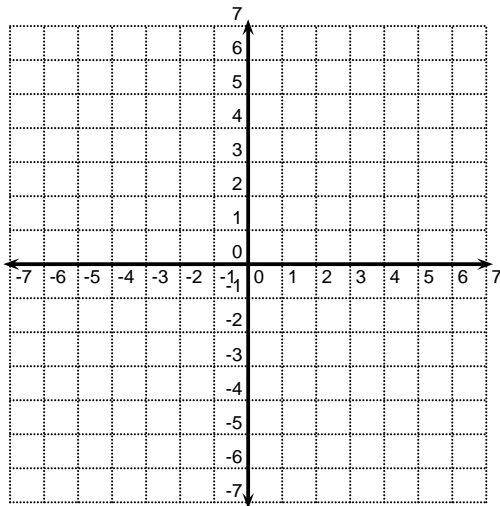


4. The graph of  $y = f(x)$  is shown below.

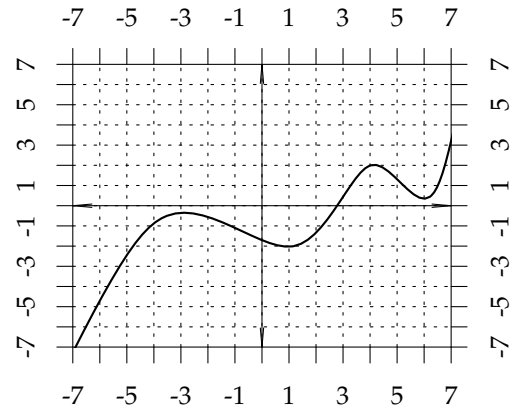


- For what  $x$  values is  $f(x) \geq 0$ ? Write your answer in interval notation.
- For what  $x$  values is  $f(x) < 0$ ? Write your answer in interval notation.
- For what  $x$  values is  $f(x) \leq -1$ ? Write your answer in interval notation.
- What is  $\frac{f(3) - f(2)}{2f(-6)}$ ?

5. Graph the function  $f(x) = \lceil x - 2 \rceil$ .



6. Find the  $x$  values of all local maxima and minima.



7. For each of the graphs below, answer the following questions:

- A. Is  $y$  a function of  $x$ ?
- B. Is  $x$  a function of  $y$ ?

