



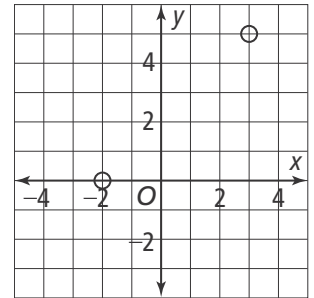
1-3 Additional Practice

Piecewise-Defined Functions

1. A phone company offers a monthly data plan for \$10 a month. The plan includes 2 Megabytes of data, and charges \$0.10 per megabytes above the 2 megabytes of data. Write a piecewise-defined function for $T(x)$, the cost for the number of text messages in a month.

2. Graph the piecewise-defined function. State the domain and range. Identify whether the function is increasing, constant or decreasing on each interval of the domain.

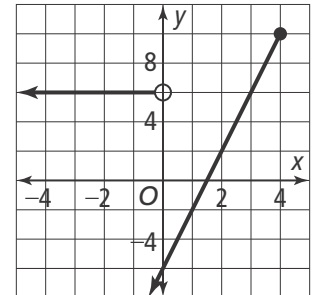
$$f(x) = \begin{cases} 2 & -4 \leq x \leq -2 \\ -2 + x & -2 < x < 3 \\ -3x + 12 & 3 \leq x \leq 5 \end{cases}$$



3. Write the rule that defines the piecewise-defined function in the following graph.

4. Write each absolute value function as a piecewise-defined function.

$$f(x) = |2x - 8|$$



5. For packages withing a certain size category A shipping service uses the weight of a package to determine its postage. The charge is \$3 for the first pound and \$2 for each additional pound up to 5 pounds. What are the domain and range of the function?

$$f(x) = \begin{cases} 3, & \text{if } 0 < x \leq 1 \\ 5, & \text{if } 1 < x \leq 2 \\ 7, & \text{if } 2 < x \leq 3 \\ 9, & \text{if } 3 < x \leq 4 \\ 11, & \text{if } 4 < x \leq 5 \end{cases}$$

6. You plan to rent a car from XYZ Car Rental Company at a flat fee of \$35 a day. In addition to that flat fee of \$35 per day, you must pay a \$10 fee per day for 1–3 days. If you keep the car longer than 3 days, there is a \$5 fee per day. Write a piecewise-defined function that models this function.