

Piecewise functions are represented by a combination of equations, each corresponding to a part of the domain.

Ex. 1: Evaluate the function $g(x) = \begin{cases} 3x + 2, & \text{if } x < 5 \\ -2x, & \text{if } x \geq 5 \end{cases}$ for the given value of x .

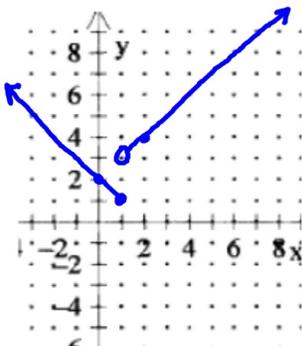
a) $g(5) = -2(5) = -10$

b) $g(-2) = 3(-2) + 2 = -4$

Ex. 2: Graph each function.

a) $f(x) = \begin{cases} x + 2, & \text{if } x > 1 \\ -x + 2, & \text{if } x \leq 1 \end{cases}$

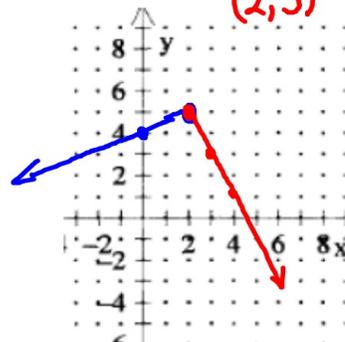
endpts.
 $(1, 3)$
 $(1, 1)$



b) $f(x) = \begin{cases} -\frac{1}{2}x + 4, & \text{if } x < 2 \\ -2x + 9, & \text{if } x \geq 2 \end{cases}$

$(2, 5)$

$(2, 5)$



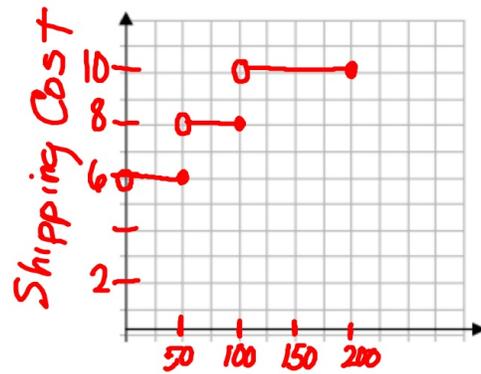
Ex. 3: An on-line store charges its customers \$6 shipping on purchases up to \$50, \$8 on purchases over \$50 up to \$100, and \$10 on purchases over \$100 up to \$200. The shipping cost C , (in dollars), based on the total amount of purchases x , is given by the function $C(x)$.

$$C(x) = \begin{cases} 6, & \text{if } 0 < x \leq 50 \\ 8, & \text{if } 50 < x \leq 100 \\ 10, & \text{if } 100 < x \leq 200 \end{cases}$$

$$D: 0 < x \leq 200$$

$$R: 6, 8, 10$$

Graph the function and give the domain and range.



Step function