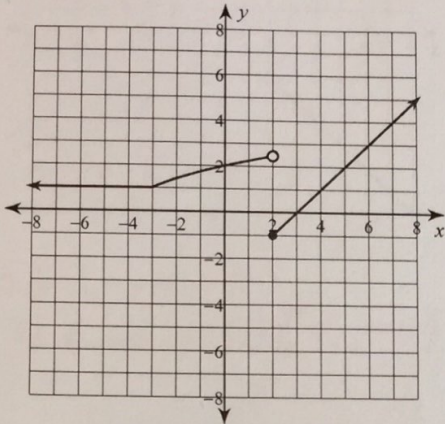


Piecewise Functions

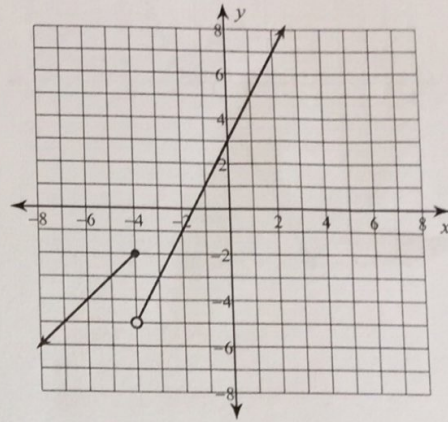
Sketch the graph of each function. Then state the domain and range.

$$1) w(x) = \begin{cases} 1, & x \leq -3 \\ \sqrt{x+4}, & -3 < x < 2 \\ |x| - 3, & x \geq 2 \end{cases}$$



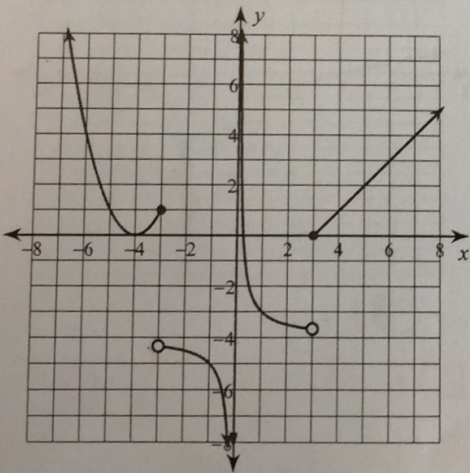
$D: (-\infty, \infty)$
 $R: [-1, \infty)$

$$2) h(x) = \begin{cases} x+2, & x \leq -4 \\ 2x+3, & x > -4 \end{cases}$$



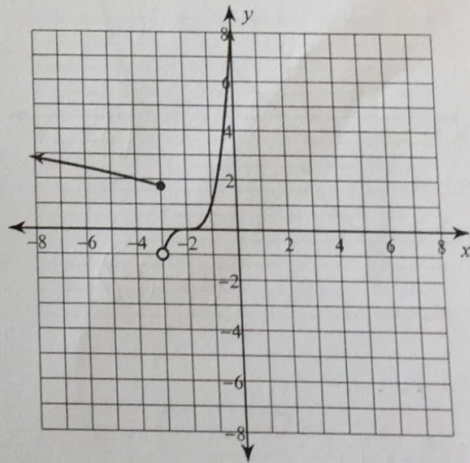
$D: (-\infty, \infty)$
 $R: (-\infty, \infty)$

$$3) g(x) = \begin{cases} (x+4)^2, & x \leq -3 \\ \frac{1}{x} - 4, & -3 < x < 3 \\ |x| - 3, & x \geq 3 \end{cases}$$



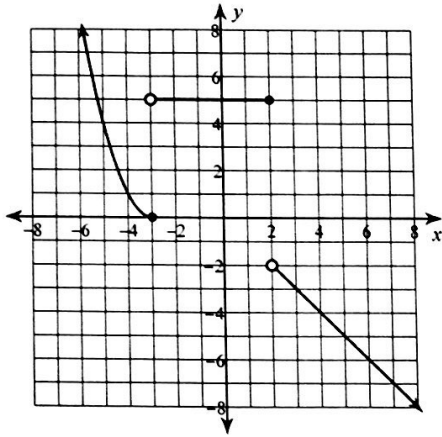
$D: (-\infty, 0) \cup (0, \infty)$
 $R: (-\infty, -13/3) \cup (-11/3, \infty)$

$$4) h(x) = \begin{cases} \sqrt{-x}, & x \leq -3 \\ (x+2)^3, & x > -3 \end{cases}$$



$D: (-\infty, \infty)$
 $R: (-\infty, \infty)$

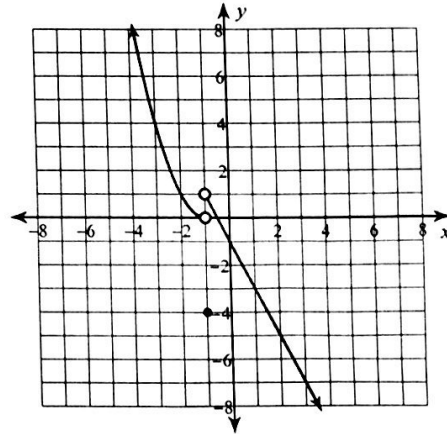
$$5) g(x) = \begin{cases} (x+3)^2, & x \leq -3 \\ 5, & -3 < x \leq 2 \\ -|x|, & x > 2 \end{cases}$$



$$\mathbb{D} (-\infty, \infty)$$

$$\mathbb{R} (-\infty, -2) \cup [0, \infty)$$

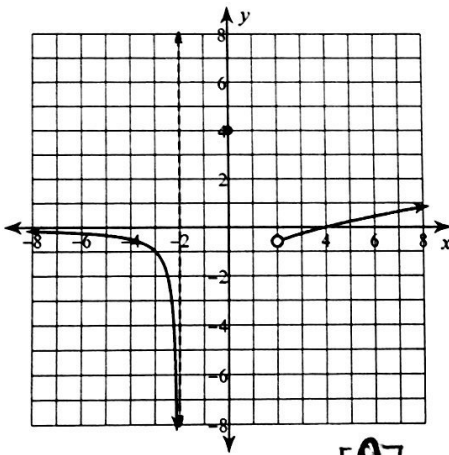
$$6) f(x) = \begin{cases} (x+1)^2, & x < -1 \\ x^3 - 3, & x = -1 \\ -2x - 1, & x > -1 \end{cases}$$



$$\mathbb{D} (-\infty, \infty)$$

$$\mathbb{R} (-\infty, \infty)$$

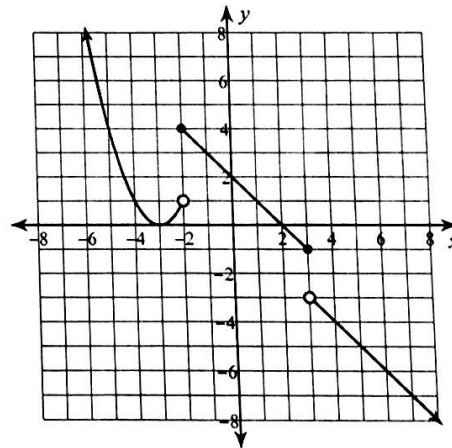
$$7) h(x) = \begin{cases} \frac{1}{x+2}, & x \leq -2 \\ 4, & x = 0 \\ -2 + \sqrt{x}, & x > 2 \end{cases}$$



$$\mathbb{D} (-\infty, -2) \cup (2, \infty)$$

$$\mathbb{R} (-\infty, \infty)$$

$$8) h(x) = \begin{cases} (x+3)^2, & x < -2 \\ -x+2, & -2 \leq x \leq 3 \\ -|x|, & x > 3 \end{cases}$$



$$\mathbb{D} (-\infty, \infty)$$

$$\mathbb{R} (-\infty, -3) \cup [-1, \infty)$$