5-3 Square Root Functions and Inequalities

Identify the domain and range of each function.

14. $f(x) = \sqrt{x} - 6$

   ANSWER:
   $D = \{x \mid x \geq 0\}; R = \{f(x) \mid f(x) \geq -6\}$

15. $f(x) = 4\sqrt{x-2} - 8$

   ANSWER:
   $D = \{x \mid x \geq 2\}; R = \{f(x) \mid f(x) \geq -8\}$

16. $f(x) = \sqrt{x+2} + 5$

   ANSWER:
   $D = \{x \mid x \geq -2\}; R = \{f(x) \mid f(x) \geq 5\}$

17. $f(x) = \sqrt{x-4} - 6$

   ANSWER:
   $D = \{x \mid x \geq 4\}; R = \{f(x) \mid f(x) \geq -6\}$
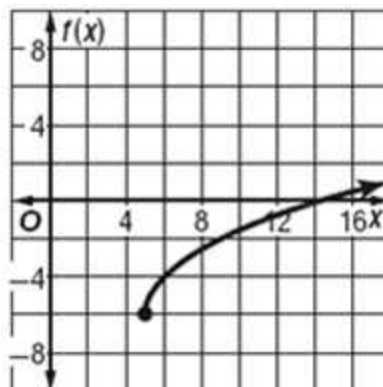
18. $f(x) = -\sqrt{x-6} + 5$

   ANSWER:
   $D = \{x \mid x \geq 6\}; R = \{f(x) \mid f(x) \leq 5\}$

Graph each function. State the domain and range.
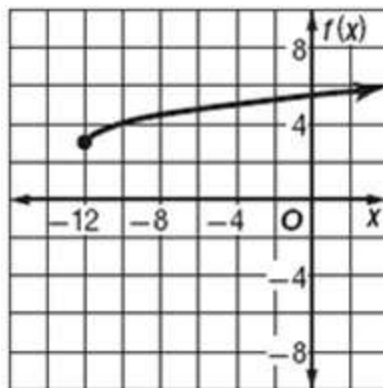
25. $f(x) = 2\sqrt{x-5} - 6$

   ANSWER:

   $D = \{x \mid x \geq 5\} \quad R = \{f(x) \mid f(x) \geq -6\}$
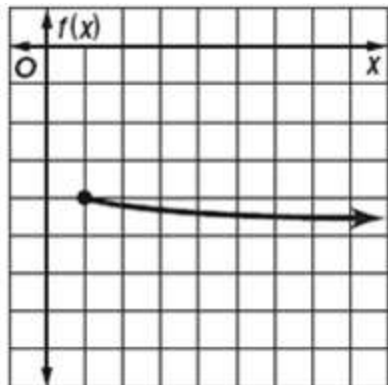
26. $f(x) = \frac{3}{4}\sqrt{x+12} + 3$

   ANSWER:

   $D = \{x \mid x \geq -12\} \quad R = \{f(x) \mid f(x) \geq 3\}$

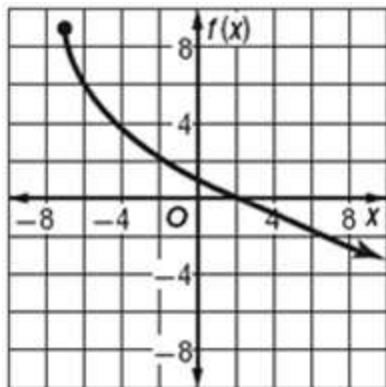27. $f(x) = -\dfrac{1}{5}\sqrt{x-1} - 4$

ANSWER:

$$D = \{x \mid x \geq 1\} \quad R = \{f(x) \mid f(x) \leq -4\}$$
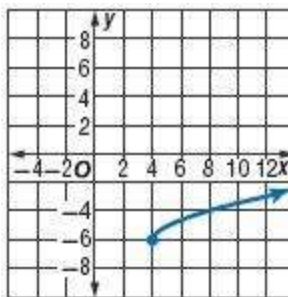
28. $f(x) = -3\sqrt{x+7} + 9$

ANSWER:

$$D = \{x \mid x \geq -7\} \quad R = \{f(x) \mid f(x) \leq 9\}$$

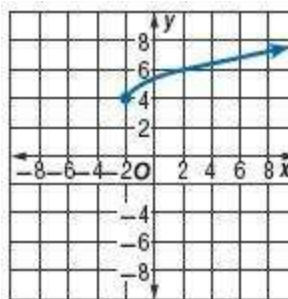**Write the square root function represented by each graph.**

41.

ANSWER:

$$y = \sqrt{x-4} - 6$$

42.

ANSWER:

$$y = \sqrt{x+2} + 4$$