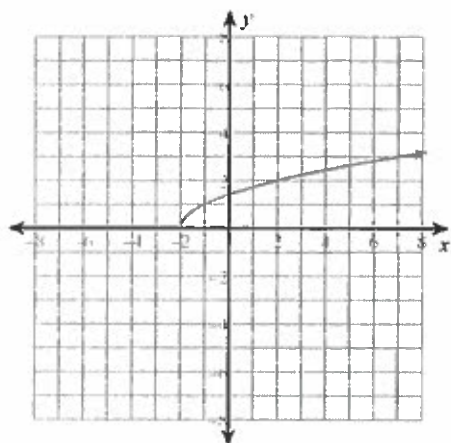


Key

Day 2- Graphing & Solving Radical Functions

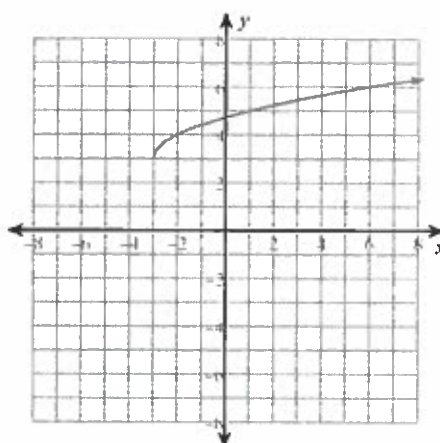
Sketch the graph of each function. On the even problems, state the domain and range.

1) $y = \sqrt{x+2}$



Domain: $x \geq -2$
Range: $y \geq 0$

2) $y = \sqrt{x+3} + 3$

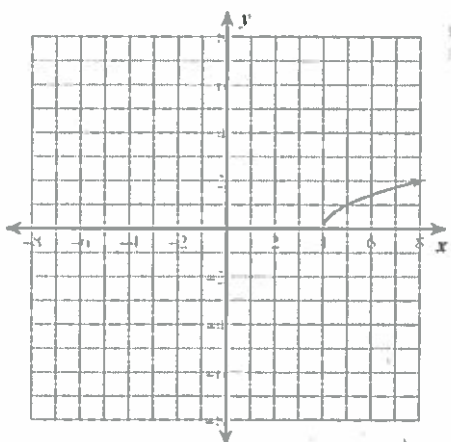


Domain: $x \geq -3$
Range: $y \geq 3$

D: $[-3, \infty)$

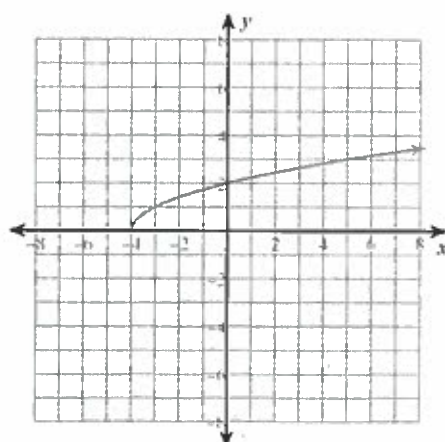
R: $[3, \infty)$

3) $y = \sqrt{x-4}$



Domain: $x \geq 4$
Range: $y \geq 0$

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

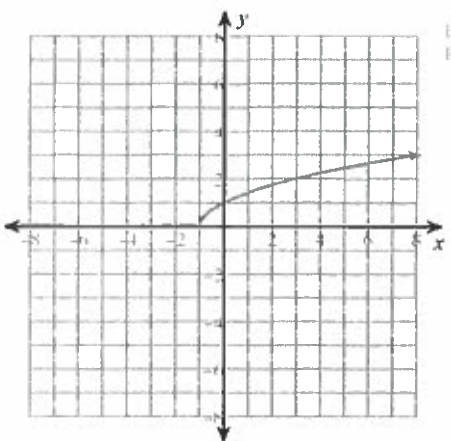


Domain: $x \geq -4$
Range: $y \geq 0$

D: $[-4, \infty)$

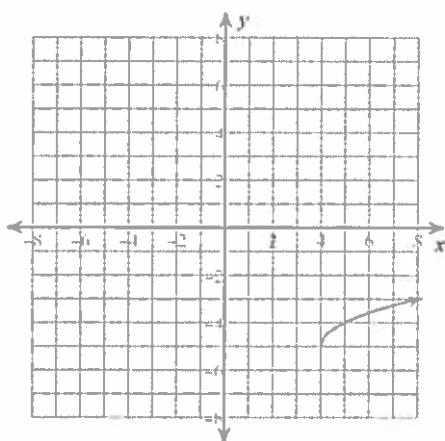
R: $[0, \infty)$

5) $y = \sqrt{x+1}$



Domain: $x \geq -1$
Range: $y \geq 0$

6) $y = \sqrt{x-4} - 5$

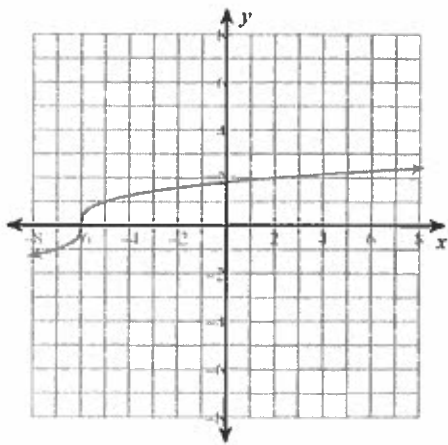


Domain: $x \geq 4$
Range: $y \geq -5$

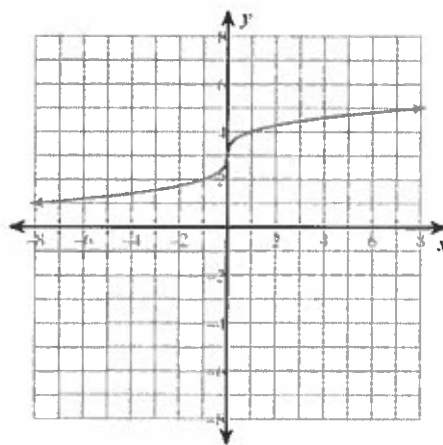
D: $[4, \infty)$

R: $[-5, \infty)$

7) $y = \sqrt[3]{x+6}$



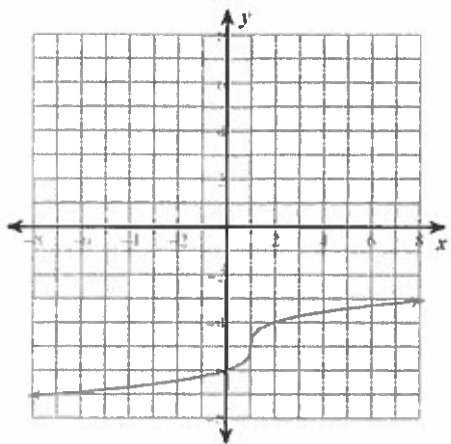
8) $y = \sqrt[3]{x} + 3$



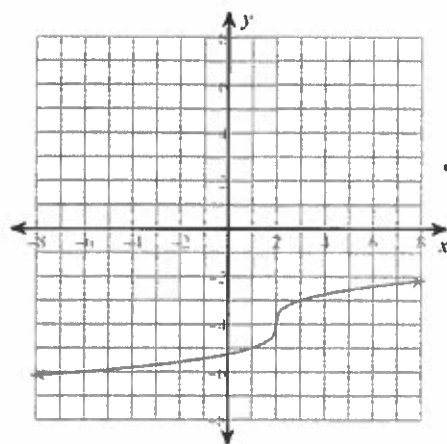
$D: (-\infty, \infty)$

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

9) $y = \sqrt[3]{x-1} - 5$



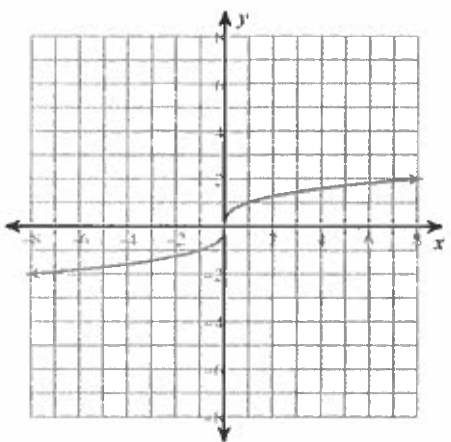
10) $y = -4 + \sqrt[3]{x-2}$



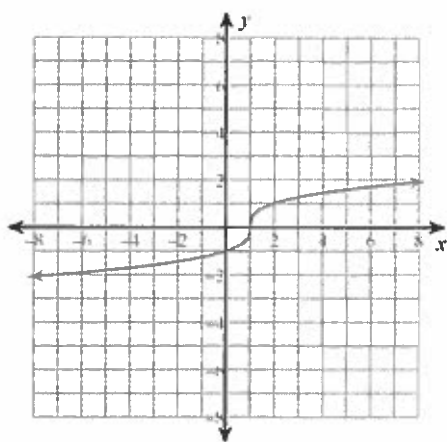
$D: (-\infty, \infty)$

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

11) $y = \sqrt[3]{x}$



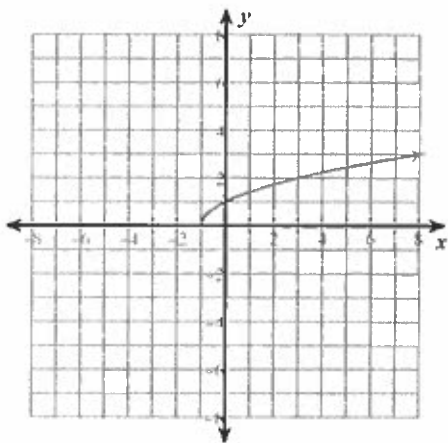
12) $y = \sqrt[3]{x-1}$



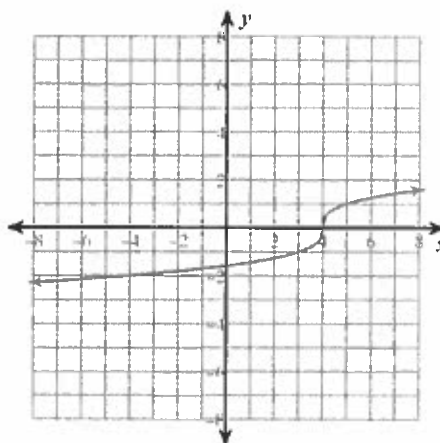
$D: (-\infty, \infty)$

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

13) $y = \sqrt{x+1}$



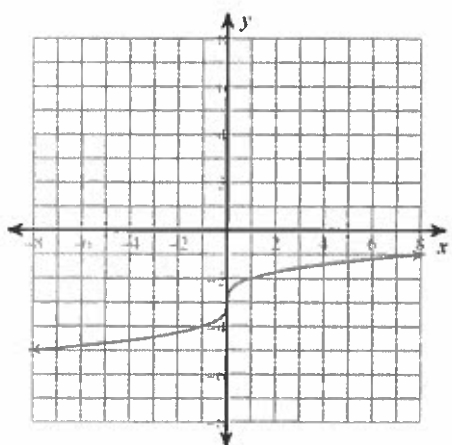
14) $y = \sqrt[3]{x-4}$



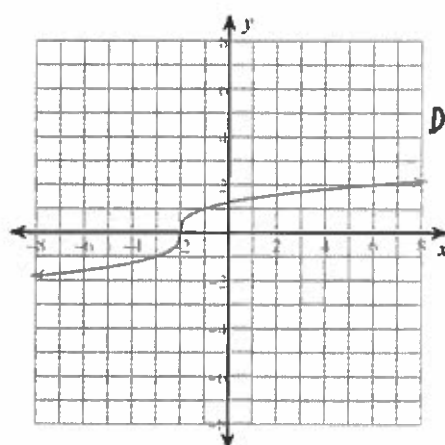
D: $(-\infty, \infty)$

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

15) $y = \sqrt[3]{x} - 3$



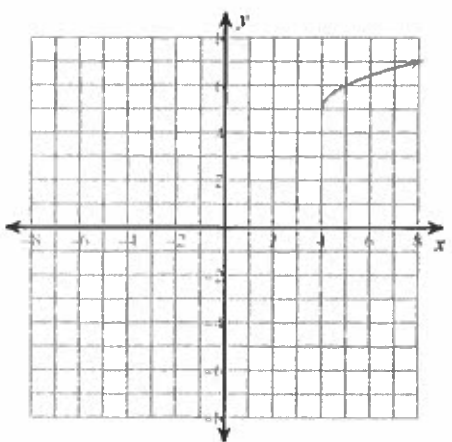
16) $y = \sqrt[3]{x+2}$



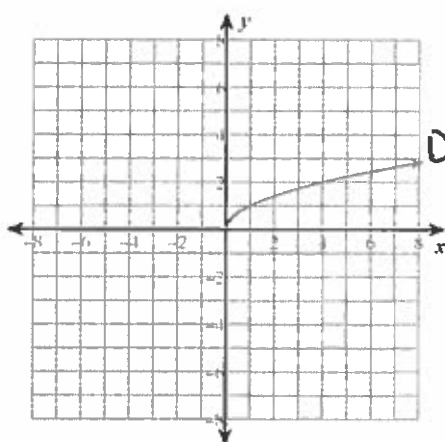
D: $(-\infty, \infty)$

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

17) $y = \sqrt{x-4} + 5$



18) $y = \sqrt{x}$



D: $[0, \infty)$

R: $[0, \infty)$

Solve each equation. Remember to check for extraneous solutions.

$$19) \sqrt[3]{19-3a} = 7$$

$$(\sqrt[3]{19-3a})^3 = (7)^3$$

$$a = -108$$

$$\cancel{19} - 3a = 343$$

$$\frac{-3a}{-3} = \frac{324}{-3}$$

$$21) \left(\sqrt[3]{\frac{r}{3}}\right)^3 = (2)^3$$

$$\frac{r}{3} = (8)3$$

$$r = 24$$

$$23) 8\sqrt{10b+64} = 64$$

$$b = 0$$

$$25) \sqrt{\frac{x}{5}} + 6 = 13$$

$$x = 245$$

$$27) \sqrt{\frac{x}{4}} = \sqrt{9-2x}$$

$$x = 4$$

$$29) \sqrt{2p+3} = \sqrt{4p-1}$$

$$p = 2$$

$$31) v-4 = \sqrt{4v-4}$$

$$v = 10$$

WORK ON
NEXT PAGE

$$20) (8)^3 = (\sqrt[3]{11n+9})^3$$

$$512 = 11n + 9$$

$$\frac{503}{11} = \frac{11n}{11}$$

$$n = \frac{503}{11}$$

$$22) 9 = 7 + \sqrt[3]{2r}$$

$$(2)^3 = (\sqrt[3]{2r})^3$$

$$\frac{8}{2} = \frac{2r}{2}$$

$$r = 4$$

$$24) 36 = 4\sqrt{7x+11}$$

$$x = 10$$

$$26) 11 = \sqrt{-2-3k} + 9$$

$$k = -2$$

$$28) \sqrt{r+4} = \sqrt{3r-4}$$

$$r = 4$$

$$30) \sqrt{54-n} = \sqrt{\frac{n}{5}}$$

$$n = 45$$

$$32) x+3 = \sqrt{4x+8}$$

$$x = -1$$

WORK ON
NEXT PAGE

$$\begin{array}{r} \textcircled{25} \quad \sqrt{\frac{x}{5}} + 6 = 13 \\ \quad \quad \quad -6 \quad \quad -6 \\ \hline \left(\sqrt{\frac{x}{5}}\right)^2 = (7)^2 \end{array}$$

$$\begin{array}{l} \textcircled{5} \quad \frac{x}{5} = 49 \textcircled{5} \\ \boxed{x = 245} \end{array}$$

$$\textcircled{27} \quad \left(\sqrt{\frac{x}{4}}\right)^2 = (\sqrt{9-2x})^2$$

$$4 \cdot \frac{x}{4} = (9-2x) \cdot 4$$

$$\begin{array}{r} x = \cancel{36} - 8x \\ +8x \quad +8x \\ \hline \end{array}$$

$$\frac{9x}{9} = \frac{36}{9}$$

$$\boxed{x = 4}$$

$$\textcircled{31} \quad (v-4)^2 = (\sqrt{4v-4})^2$$

$$\text{FOIL} \quad (v-4)(v-4) = 4v-4$$

$$\downarrow \quad v^2 - 4v - 4v + 16 = 4v - 4$$

$$\begin{array}{r} \quad \quad \quad \downarrow \\ v^2 - 8v + 16 = 4v - 4 \\ \quad \quad -4v + 4 \quad \quad -4v + 4 \\ \hline \end{array}$$

$$\text{FACTOR} \quad v^2 - 12v + 20 = 0$$

$$(v-10)(v-2) = 0$$

$$\boxed{v=10} \quad \textcircled{v=2}$$

MUST CHECK ANSWERS

$$(10-4) = \sqrt{4(10)-4}$$

$$6 = \sqrt{40-4}$$

$$6 = \sqrt{36}$$

$$6 = 6 \quad \checkmark \quad \boxed{v=10}$$

$$2-4 = \sqrt{4(2)-4}$$

$$-2 = \sqrt{8-4}$$

$$-2 = \sqrt{4}$$

$$-2 = 2 \quad \times \quad \text{---} \cancel{v=2}$$

$$(32) (x+3)^2 = (\sqrt{4x+8})^2$$

$$(x+3)(x+3) = 4x+8$$

$$x^2 + 3x + 3x + 9 = 4x + 8$$

$$x^2 + 6x + 9 = 4x + 8$$

$$\begin{array}{r} x^2 + 6x + 9 = 4x + 8 \\ -4x \quad -8 \quad -4x \quad -8 \\ \hline \end{array}$$

$$x^2 + 2x + 1 = 0$$

$$(x+1)(x+1)$$

$$(x = -1) \quad x = -1$$

$$\boxed{x = -1}$$

CHECK ANSWER

$$x+3 = \sqrt{4x+8}$$

$$-1+3 = \sqrt{4(-1)+8}$$

$$2 = \sqrt{4}$$

$$2 = 2 \checkmark$$