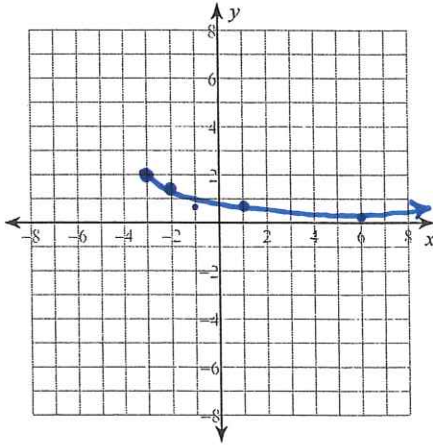


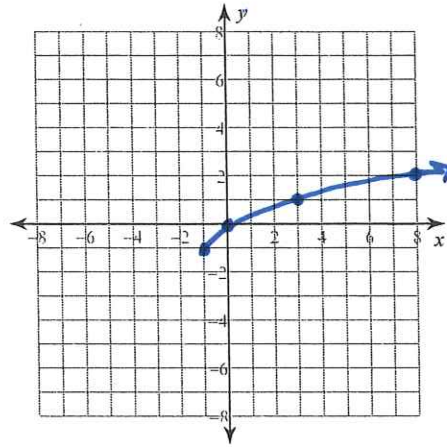
Test 12 - study guide

Sketch the graph of each function.

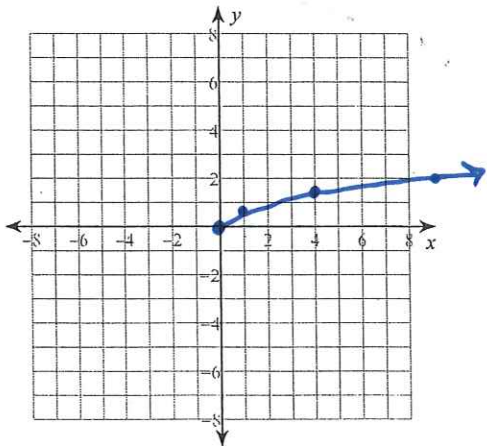
1) $y = -\frac{3}{5}\sqrt{x+3} + 2$



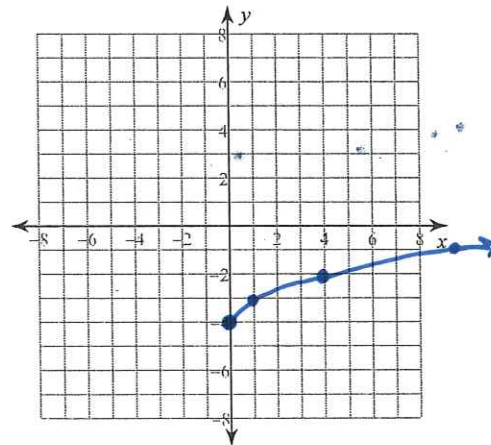
2) $y = \sqrt{x+1} - 1$



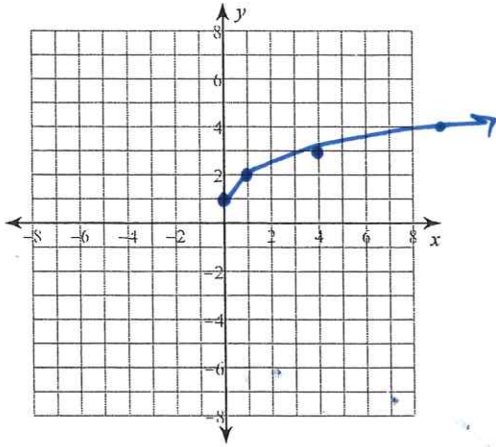
3) $y = \frac{2}{3}\sqrt{x}$



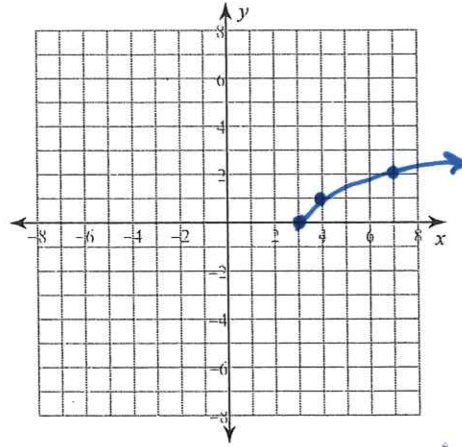
4) $y = -4 + \sqrt{x}$



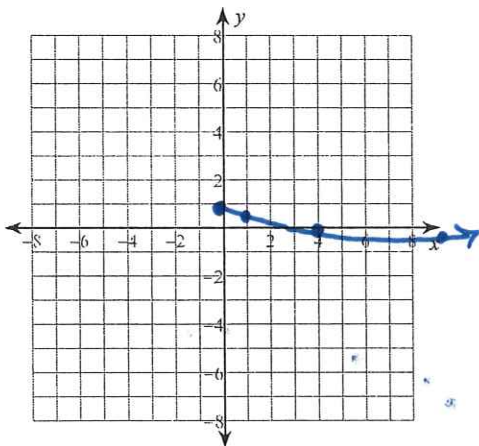
$$5) y = \sqrt{x+1}$$



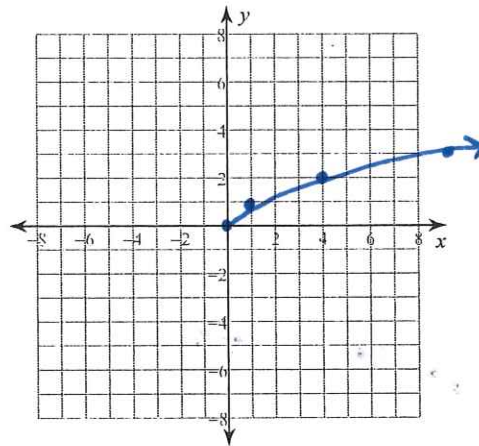
$$6) y = \sqrt{x-3}$$



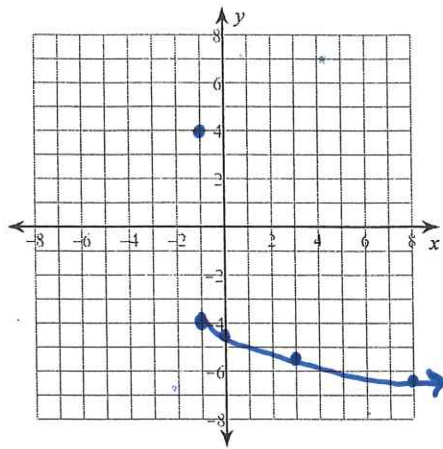
$$7) y = 1 - \frac{1}{2}\sqrt{x}$$



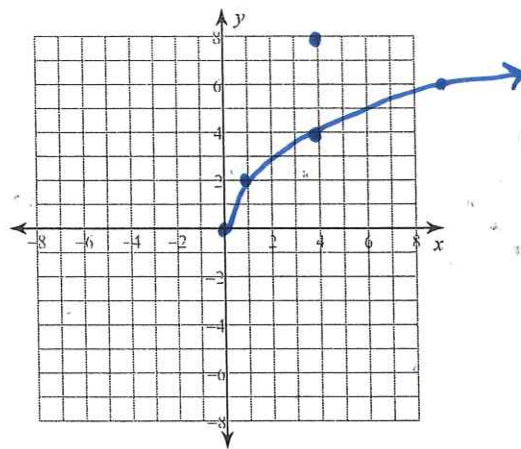
$$8) y = \sqrt{x}$$



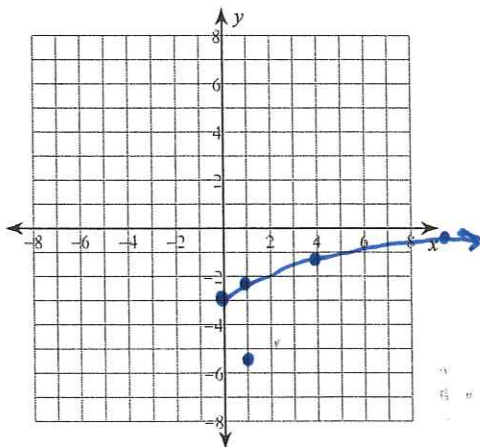
$$9) y = -\frac{3}{4}\sqrt{x+1} - 4$$



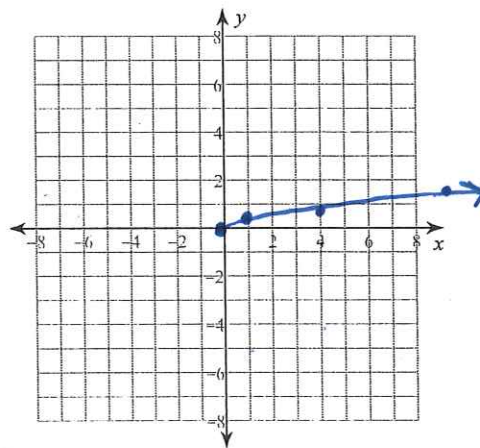
$$10) y = 2\sqrt{x}$$



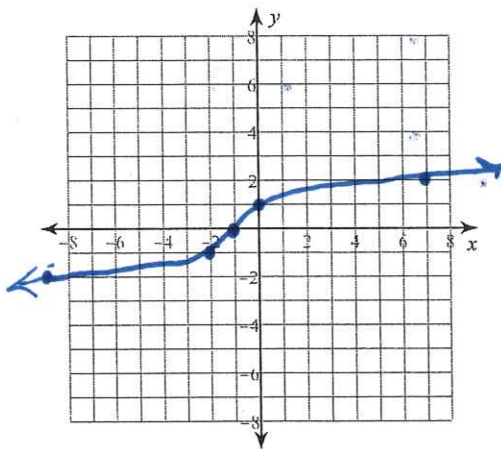
$$11) y = \frac{4}{5}\sqrt{x} - 3$$



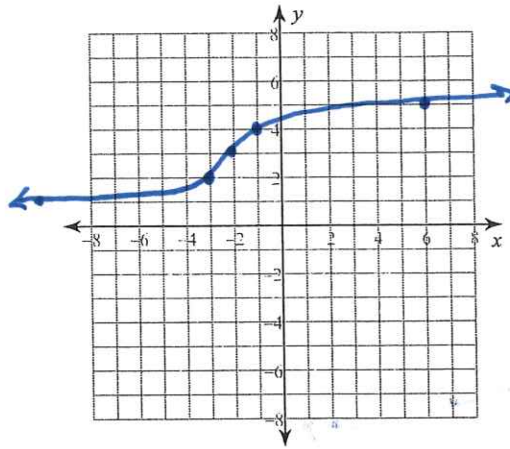
$$12) y = \sqrt{\frac{4x}{25}}$$



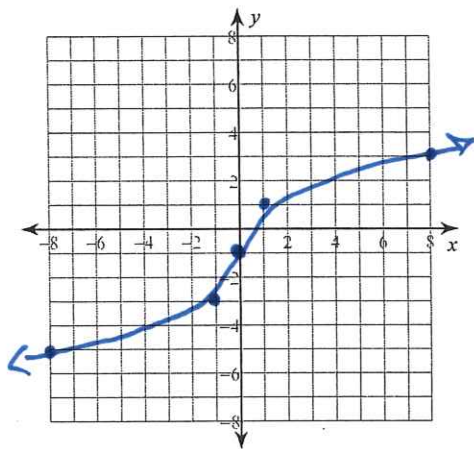
13) $y = \sqrt[3]{x+1}$



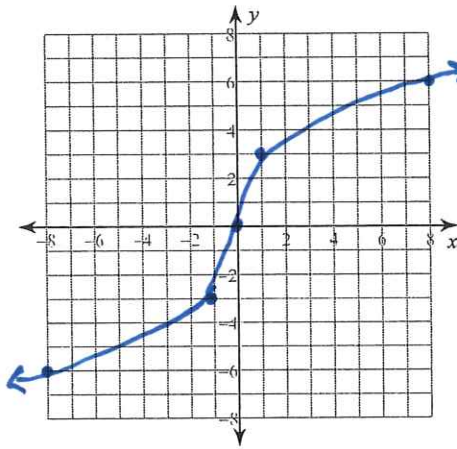
14) $y = 3 + \sqrt[3]{x+2}$



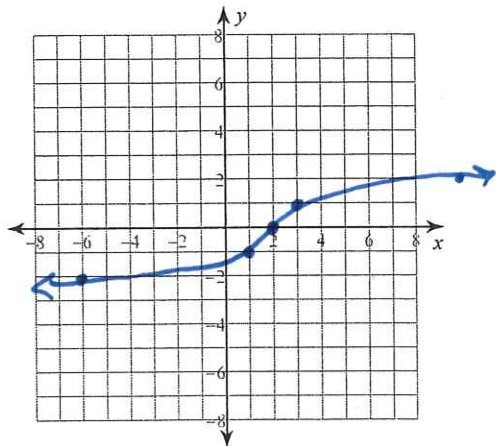
15) $y = 2\sqrt[3]{x} - 1$



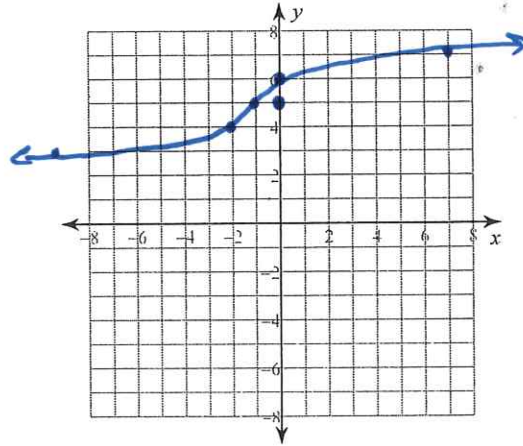
16) $y = 3\sqrt[3]{x}$



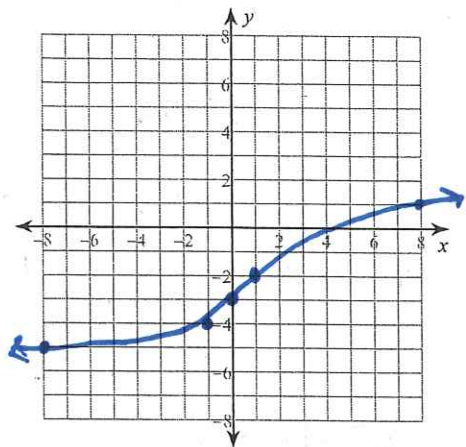
17) $y = \sqrt[3]{x-2}$



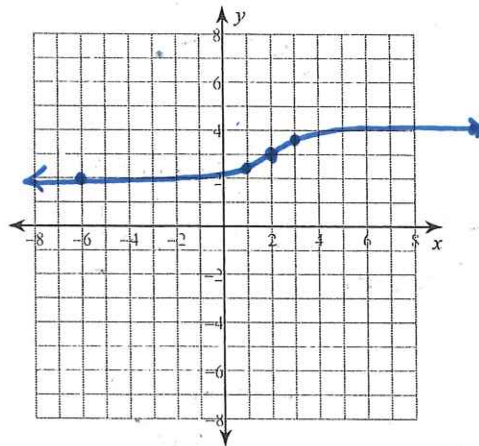
18) $y = \sqrt[3]{x+1} + 5$



$$19) y = \sqrt[3]{x} - 3$$



$$20) y = \frac{1}{2} \sqrt[3]{x-2} + 3$$



Identify the domain and range of each.

$$21) y = 2\sqrt{x-3} - 4 \quad D: [3, \infty) \\ R: [-4, \infty)$$

$$22) y = \frac{4}{5}\sqrt{x} \quad D: [0, \infty) \\ R: [0, \infty)$$

$$23) y = -2\sqrt{x-3} \quad D: [3, \infty) \\ R: (-\infty, 0]$$

$$24) y = \sqrt{x+3} + 3 \quad D: [-3, \infty) \\ R: [3, \infty)$$

$$25) y = \sqrt{x+4} - 5 \quad D: [-4, \infty) \\ R: [-5, \infty)$$

$$26) y = 5 - \frac{1}{2}\sqrt{x+2} \quad D: [-2, \infty) \\ R: (-\infty, 5]$$

Solve each equation. Remember to check for extraneous solutions.

$$27) x = 2 + \sqrt{3x-6} \\ (x-2)^2 = (\sqrt{3x-6})^2 \\ x^2 - 4x + 4 = 3x - 6 \\ x^2 - 7x + 10 = 0 \\ \boxed{x = 2, 5}$$

$$28) a = \sqrt{-24 + 11a} \\ a^2 = -24 + 11a \\ a^2 - 11a + 24 = 0 \\ \boxed{a = 3, 8}$$

$$29) n - 6 = \sqrt{2n - 12} \\ n^2 - 12n + 36 = 2n - 12 \\ n^2 - 14n + 48 = 0 \\ \boxed{n = 8, 6}$$

$$30) \sqrt{2n-13} = \sqrt{14-n} \\ 2n-13 = 14-n \\ 3n = 27 \\ \boxed{n = 9}$$

$$31) k = \sqrt{2-k}$$

$$k^2 = 2-k$$

$$k^2 + k - 2 = 0$$

$$\boxed{k=1}$$

$$~~k=-2~~$$

$$32) \sqrt{90-k} = k$$

$$90-k = k^2$$

$$k^2 + k - 90 = 0$$

$$\boxed{k=9}$$

$$~~k=-10~~$$

$$33) -k + \sqrt{7k-13} = -1$$

$$(\sqrt{7k-13})^2 = (k-1)^2$$

$$7k-13 = k^2 - 2k + 1$$

$$k^2 - 9k + 14 = 0$$

$$\boxed{k=7, 2}$$

$$34) m+1 = \sqrt{4m+25}$$

$$m^2 + 2m + 1 = 4m + 25$$

$$m^2 - 2m - 24 = 0$$

$$\boxed{m=6}$$

$$~~m=-4~~$$

$$35) x = 4 + \sqrt{4x-4}$$

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

$$x^2 - 8x + 16 = 4x - 4$$

$$x^2 - 12x + 20 = 0$$

$$\boxed{x=10}$$

$$~~x=2~~$$

$$36) \sqrt{9x} = x$$

$$9x = x^2$$

$$x^2 - 9x = 0$$

$$\boxed{x=0, 9}$$

$$37) -5 + \sqrt{2x+56} = 3$$

$$\sqrt{2x+56} = 8$$

$$2x+56 = 64$$

$$\rightarrow 2x = 8$$

$$\boxed{x=4}$$

$$38) \sqrt{-7-8k} = 7$$

$$-7-8k = 49$$

$$-8k = 56$$

$$\boxed{k=-7}$$

$$39) \sqrt{x+3} = 1$$

$$x+3 = 1$$

$$\boxed{x=-2}$$

$$40) b = 3 + \sqrt{30-2b}$$

$$(b-3)^2 = (\sqrt{30-2b})^2$$

$$b^2 - 6b + 9 = 30 - 2b$$

$$b^2 - 4b - 21 = 0$$

$$\boxed{b=7}$$

$$~~b=-3~~$$

$$41) \sqrt{-1-3n} = \sqrt{2-2n}$$

$$-1-3n = 2-2n$$

$$\boxed{-3 = n}$$

$$42) b-4 = \sqrt{5b-14}$$

$$b^2 - 8b + 16 = 5b - 14$$

$$b^2 - 13b + 30 = 0$$

$$\boxed{b=10}$$

$$~~b=3~~$$

$$43) -x + \sqrt{3x-8} = -2$$

$$(\sqrt{3x-8})^2 = (x-2)^2$$

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

$$x^2 - 7x + 12 = 0$$

$$\boxed{x=4}$$

$$\boxed{x=3}$$

$$44) \sqrt{n+2} = 4$$

$$n+2 = 16$$

$$\boxed{n=14}$$

$$45) \sqrt{63-2x} = \sqrt{\frac{x}{10}}$$

$$63-2x = \frac{x}{10}$$

$$630 - 20x = x$$

$$630 = 21x$$

$$\boxed{x=30}$$

$$46) -2 = \sqrt{3x-8} - x$$

$$(x-2)^2 = (\sqrt{3x-8})^2$$

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

$$x^2 - 7x + 12 = 0$$

$$\boxed{x=4, 3}$$