

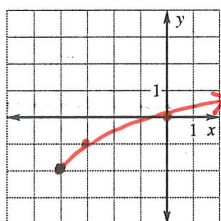
Name Key

Date _____

LESSON
6.5

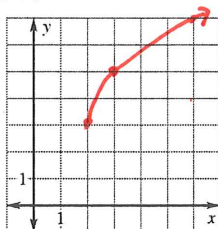
Graph the function. Then state the domain and range.

1. $f(x) = \sqrt{x+4} - 2$



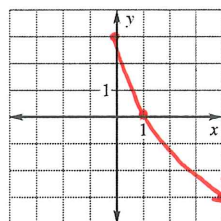
D: $[-4, +\infty)$
R: $[-2, +\infty)$

2. $f(x) = 2\sqrt{x-2} + 3$



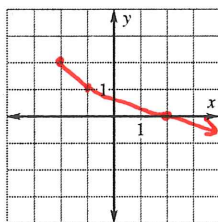
D: $[2, +\infty)$
R: $[3, +\infty)$

3. $f(x) = -3\sqrt{x} + 3$



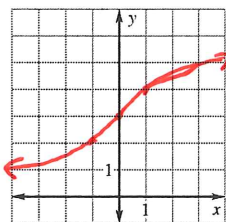
D: $[0, +\infty)$
R: $(-\infty, 3]$

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



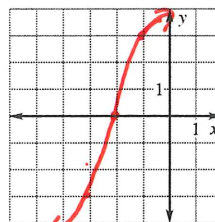
D: $[-2, +\infty)$
R: $(-\infty, 2]$

5. $f(x) = \sqrt[3]{x} + 3$



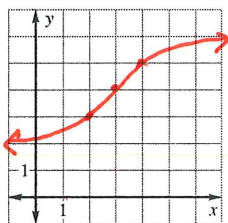
D: $(-\infty, +\infty)$
R: $(-\infty, +\infty)$

6. $f(x) = 3\sqrt[3]{x+2}$



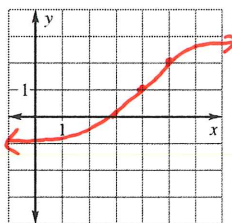
D: $(-\infty, +\infty)$
R: $(-\infty, +\infty)$

7. $f(x) = \sqrt[3]{x-3} + 4$



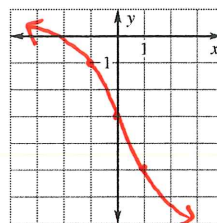
D: $(-\infty, +\infty)$
R: $(-\infty, +\infty)$

8. $f(x) = \sqrt[3]{x-4} + 1$



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

9. $f(x) = -2\sqrt[3]{x} - 3$



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

LESSON 6.6

Solve the equation. Check your solution.

- 3. $3\sqrt{x+2} = 6$ $x = 34$
- 6. $3\sqrt{4-3x} = 21$ $x = -15$
- 9. $2(x-1)^{1/2} - 3 = 7$ $x = 26$

3) $3\sqrt{x+2} = 6$
 $(\sqrt{x+2})^2 = (6/3)^2$
 $x+2 = 36$
 $x = 34$

6) $3\sqrt{4-3x} = 21$
 $(\sqrt{4-3x})^2 = (7)^2$
 $4-3x = 49$
 $-3x = 45$
 $x = -15$

9) $2(x-1)^{1/2} - 3 = 7$
 $+3 \quad +3$
 $2(x-1)^{1/2} = 10$
 $\frac{2(x-1)^{1/2}}{2} = \frac{10}{2}$
 $((x-1)^{1/2})^2 = (5)^2$
 $x-1 = 25$
 $x = 26$

Solve the equation. Check your solution.

- 12. $\sqrt[3]{2x+7} = 5$ $x = 59$
- 15. $3x^{1/3} - 2 = -4$ $x = -\frac{8}{27}$
- 18. $6\sqrt[3]{x-3} + 2 = \frac{1}{2}$
 $x = \frac{191}{64}$

12) $(\sqrt[3]{2x+7})^3 = (5)^3$
 $2x+7 = 125$
 $2x = 118$
 $x = 59$

15) $3x^{1/3} - 2 = -4$
 $3x^{1/3} = -2$
 $(x^{1/3})^3 = (-\frac{2}{3})^3$
 $x = -\frac{8}{27}$

18) $6\sqrt[3]{x-3} + 2 = \frac{1}{2}$
 $-2 \quad -2$
 $6\sqrt[3]{x-3} = -\frac{3}{2}$
 $(\sqrt[3]{x-3})^3 = (-\frac{1}{4})^3$
 $x-3 = -\frac{1}{64}$
 $x = \frac{191}{64}$

Solve the equation. Check for extraneous solutions.

- 20. $x^{3/2} + 3 = 11$ $x = 4$
- 22. $(x-2)^{3/4} = 8$ $x = 18$
- 24. $(3x+21)^{4/3} + 9 = 90$
 $x = -16, 2$

20) $x^{3/2} + 3 = 11$
 $(x^{3/2})^{2/3} = (8)^{2/3}$
 $x = 4$

22) $((x-2)^{3/4})^{4/3} = (8)^{4/3}$
 $x-2 = 16$
 $x = 18$

24) $(3x+21)^{4/3} + 9 = 90$
 $((3x+21)^{4/3})^{3/4} = (81)^{3/4}$
 $3x+21 = \pm 27$
 $3x+21 = 27 \quad 3x+21 = -27$
 $3x = 6 \quad 3x = -48$
 $x = 2 \quad x = -16$

Solve the equation. Check for extraneous solutions.

- 25. $\sqrt{x-3} = \sqrt{2x-7}$ $x = 4$
- 27. $\sqrt[3]{4x-9} = \sqrt[3]{2x-4}$ $x = \frac{5}{2}$
- 29. $\sqrt{x+1} = \sqrt{3x-3}$ $x = 4$
- 31. $x+2 = \sqrt{2x+7}$ $x = 1$

25) $(\sqrt{x-3})^2 = (\sqrt{2x-7})^2$
 $x-3 = 2x-7$
 $-x+7 = -x+7$
 $4 = x$

27) $(\sqrt[3]{4x-9})^3 = (\sqrt[3]{2x-4})^3$
 $4x-9 = 2x-4$
 $2x = 5$
 $x = \frac{5}{2}$

29) $(\sqrt{x+1})^2 = (\sqrt{3x-3})^2$
 $x+2\sqrt{x+1}+1 = 3x-3$
 $-x \quad -1 \quad -x \quad -1$
 $2\sqrt{x} = 2x-4$
 $\frac{2\sqrt{x}}{2} = \frac{2x-4}{2}$
 $(\sqrt{x})^2 = (x-2)^2$
 $x = x^2-4x+4$

$x = x^2-4x+4$
 $-x$
 $0 = x^2-5x+4$
 $0 = (x-1)(x-4)$
 $x = 1, x = 4$
 check:
 $\sqrt{1+1} = \sqrt{3(1)-3}$
 $2 = 0$

31) $(x+2)^2 = (\sqrt{2x+7})^2$
 $x^2+4x+4 = 2x+7$
 $x^2+2x-3 = 0$
 $(x+3)(x-1) = 0$
 $x = -3, x = 1$
 Check:
 $-3+2 = \sqrt{2(-3)+7}$
 $-1 = \sqrt{-1}$
 $-1 \neq \sqrt{-1}$
 $1+2 = \sqrt{2(1)+7}$
 $3 = \sqrt{9}$
 $3 = 3 \checkmark$

Check:
 $\sqrt[3]{4(\frac{5}{2})-9} = \sqrt[3]{2(\frac{5}{2})-4}$
 $\sqrt[3]{\frac{10}{2}-9} = \sqrt[3]{\frac{10}{2}-4}$
 $\sqrt[3]{10-9} = \sqrt[3]{5-4}$
 $\sqrt[3]{1} = \sqrt[3]{1} \checkmark$