6-7 Solving Radical Equations and Inequalities

Solve each equation.

10. $2+4z^{\frac{1}{2}}=0$

ANSWER:
No solution

12. $\sqrt{2t-7}=\sqrt{t+2}$

ANSWER:
9

14. **MULTIPLE CHOICE** Solve $(2y+6)^{\frac{1}{4}}-2=0$.

A $y = 1$

B $y = 5$

C $y = 11$

D $y = 15$

ANSWER:
B

Solve each equation. Confirm by using a graphing calculator.

26. $\sqrt{x-3}=\sqrt{x+4}-1$

ANSWER:
12

28. $\sqrt{x-10}=1-\sqrt{x}$

ANSWER:
no real solution

32. $\sqrt{7a-2}=\sqrt{a+3}$

ANSWER:
$\frac{5}{6}$

34. $\sqrt{b-6}+\sqrt{b}=3$

ANSWER:
$\frac{25}{4}$

Solve each equation.

44. $\sqrt[3]{5x+10}-5=0$

ANSWER:
23

62. **PENDULUMS** The formula $s=2\pi\sqrt{\frac{\ell}{32}}$ represents the swing of a pendulum, where s is the time in seconds to swing back and forth, and ℓ is the length of the pendulum in feet. Find the length of a pendulum that makes one swing in 1.5 seconds.

ANSWER:
about 1.82 ft

67. **CCSS ARGUMENTS** Which equation does not have a solution?

$\sqrt{x-1}+3=4$

$\sqrt{x-2}+7=10$

$\sqrt{x+1}+3=4$

$\sqrt{x+2}-7=-10$

ANSWER:

$\sqrt{x+2}-7=-10$

68. **CHALLENGE** Lola is working to solve $(x+5)^{\frac{1}{4}}=-4$. She said that she could tell there was no real solution without even working the problem. Is Lola correct? Explain your reasoning.

ANSWER:

Yes; since $\sqrt[4]{x+5}\geq 0$, the left side of the equation is nonnegative. Therefore, the left side of the equation cannot equal –4. Thus the equation has no solution.

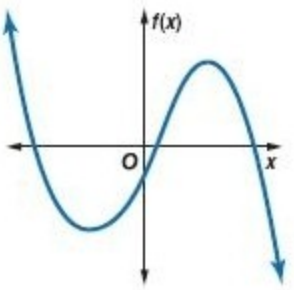
For each graph,

a. describe the end behavior,

b. determine whether it represents an odd-degree or an even-degree polynomial function, and

c. state the number of real zeros.

88.



ANSWER:

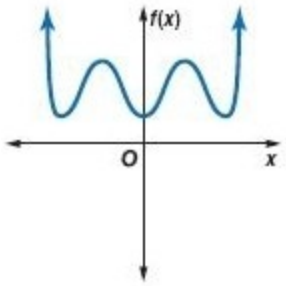
a.

$f(x)\to-\infty \text{ as } x\to+\infty,$

$f(x)\to+\infty \text{ as } x\to-\infty;$

b. odd;

c. 3

89. 

ANSWER:

a.

$f(x) \to +\infty \text{ as } x \to +\infty,$
$f(x) \to +\infty \text{ as } x \to -\infty;$

b. even;

c. 0