5-4 Additional Practice

Solving Radical Equations

Solve each radical equation.

1. $\sqrt{x-5}+9=13$ **21**

2. $\sqrt[3]{x-8}=-3$ **−19**

3. $\sqrt[3]{x}+27=30$ **27**

4. $\sqrt{12x}=16$ **21.33**

Solve each equation for *y*.

5. $x=2\left(\sqrt[3]{12+y}\right)$ **$y=\left(\frac{x}{2}\right)^3-12$**

6. $x=\frac{\sqrt{5y}}{15}$ **$y=45x^2$**

Solve each radical equation. Identify any extraneous solutions.

7. $x=\sqrt{8x+20}$ **10; extraneous solution: −2**

8. $x+6=\sqrt{x+6}$ **−5, −6; no extraneous solutions**

Solve each equation.

9. $(x^2-2x-10)^{\frac{3}{2}}-126=-1$ **−5, 7**

10. $0.8(x^2+2x+110)^{\frac{2}{3}}=20$ **−5, 3**

Solve each radical equation. Check for extraneous solutions.

11. $\sqrt{x+7}-\sqrt{8x}=-1$ **2**

12. $\sqrt{19-x}-\sqrt{10x}=-7$ **10**

13. Body surface area (BSA) is used to determine doses of medications. The formula is $BSA=\sqrt{\frac{H\cdot M}{3{,}600}}$, where H is the height in centimeters and M is the mass in kilograms. A doctor calculates that a particular dose of medicine is appropriate for an individual whose BSA is less than 1.6. If the mass of the individual is 68 kilograms, how many centimeters tall can she be for the dose to be appropriate? **up to 135.52 cm**

14. Describe and correct the error a student made in rewriting the equation to isolate y.

$$x=\frac{\sqrt{32+y}}{3.17}$$
$$3.17x=\sqrt{32+y}$$
$$3.17x^2=32+y$$ **The student did not square 3.17 when squaring both sides of the equation.**
$$3.17x^2-32=y$$ **$10.0489x^2-32=y$**

15. The half-life of a certain type of soft drink is 7 hours. If you drink 65 milliliters of this drink, the formula $y=65(0.7)^{\frac{t}{7}}$ tells the amount of the drink left in your system after t hours. How long will it take for there to be only 45.5 milliliters of the drink left in your system? **7 h**