

7-3 Skills Practice**Rational Exponents**

Write each expression in radical form, or write each radical in exponential form.

1. $(8x)^{\frac{1}{2}}$

2. $6z^{\frac{1}{2}}$

3. $\sqrt{19}$

4. $\sqrt{11}$

5. $19x^{\frac{1}{2}}$

6. $\sqrt{34}$

7. $\sqrt{27g}$

8. $33gh^{\frac{1}{2}}$

9. $\sqrt{13abc}$

Simplify.

10. $\left(\frac{1}{16}\right)^{\frac{1}{4}}$

11. $\sqrt[5]{3125}$

12. $729^{\frac{1}{3}}$

13. $\left(\frac{1}{32}\right)^{\frac{1}{5}}$

14. $\sqrt[6]{4096}$

15. $1024^{\frac{1}{5}}$

16. $\left(\frac{16}{625}\right)^{\frac{1}{4}}$

17. $\sqrt[6]{15,625}$

18. $117,649^{\frac{1}{6}}$

Solve each equation.

19. $2^x = 512$

20. $3^x = 6561$

21. $6^x = 46,656$

22. $5^x = 125$

23. $3^{x-3} = 243$

24. $4^{x-1} = 1024$

25. $6^{x-1} = 1296$

26. $2^{4x+3} = 2048$

27. $3^{3x+3} = 6561$

7-3 Practice**Rational Exponents**

Write each expression in radical form, or write each radical in exponential form.

1. $\sqrt{13}$

2. $\sqrt{37}$

3. $\sqrt{17x}$

4. $(7ab)^{\frac{1}{2}}$

5. $21z^{\frac{1}{2}}$

6. $13(ab)^{\frac{1}{2}}$

Simplify.

7. $\left(\frac{1}{81}\right)^{\frac{1}{4}}$

8. $\sqrt[5]{1024}$

9. $512^{\frac{1}{3}}$

10. $\left(\frac{32}{1024}\right)^{\frac{1}{5}}$

11. $\sqrt[4]{1296}$

12. $3125^{\frac{1}{5}}$

Solve each equation.

13. $3^x = 729$

14. $4^x = 4096$

15. $5^x = 15,625$

16. $6^{x+3} = 7776$

17. $3^{x-3} = 2187$

18. $4^{3x+4} = 16,384$

- 19. WATER** The flow of water F in cubic feet per second over a wier, a small overflow dam, can be represented by $F = 1.26H^{\frac{3}{2}}$, where H is the height of the water in meters above the crest of the wier. Find the height of the water if the flow of the water is 10.08 cubic feet per second.