Algebra 2—H
7.1-7.4, 7.6, 7.7 Review

Simplify. Express answers as fractions, integers, or exponentials in simplest form.

1. $\left(\frac{-27}{8}\right)^{-4/3}$ 2. $\frac{3^{2-3\sqrt{3}}}{3^{\sqrt{12}}}\cdot 3^{\sqrt{75}}$ 3. $\left(5^{1/4}\cdot 5^{2/3}\right)^2$

4. $\frac{x^2 y^{-1/5}}{x^{2/3} y^{4/5}}$ 5. $\frac{56^{1/3}}{8^{1/3}}$

Simplify. Express answers in simplest radical form. Assume that all radicals are defined.

6. $\sqrt{24x^3}\cdot\sqrt{3x^{10}}$ 7. $\sqrt[5]{320a^7x^{12}}$ 8. $\sqrt[4]{32n^3y}\cdot\sqrt[4]{9n^6y^7}$

9. $\sqrt[3]{\sqrt{2x^2}}\cdot\sqrt[4]{\sqrt[3]{2x^4}}$ 10. $\frac{\sqrt[6]{32}\cdot\sqrt[4]{8}}{\sqrt[3]{16}}$ 11. $\sqrt{\frac{8}{7x^3}}$

12. $\sqrt[3]{\frac{40}{9y}}$ 13. $4(45)^{1/2}+(125)^{1/2}$ 14. $6\sqrt[3]{54}-\sqrt[3]{128}$

15. $\frac{\sqrt[3]{4}}{\sqrt[6]{4}}$ 16. $\sqrt{12a^4-12a^2b^2}$

Solve for x. Round decimals to the nearest hundredth.

17. $x=\left(\sqrt[4]{100}\right)^{-3}$ 18. $(x-4)^4=625$ 19. $2x^5+7=97$

Perform the function operations and state the domain.

20. $f(x)=5x^{1/4}-3,\ g(x)=x^{3/8}-1$; find $f(x)\cdot g(x)$
21. $f(x)=3x^{2/3}+1,\ g(x)=x^{-1/3}$; find $f(x)\div g(x)$
22. $f(x)=6\sqrt[5]{x^2}+3\sqrt{x},\ g(x)=4\sqrt[5]{x^2}-5\sqrt{x}$; find $f(x)+g(x)$
23. $f(x)=6x^2-24,\ g(x)=x-2$; find $f(x)-g(x)$
24. $f(x)=(1+x)^{1/2},\ g(x)=x^2+2x$; find $f(g(x))$

25. Find the inverse of $f(x)=\frac{1}{3}x^4+2$. State the domain of the inverse.

26. Graph $y=x^2+1$ and its inverse. Is the inverse a function? Why or why not?

27. Verify that $f(x)=\sqrt[3]{4x-8}$ and $g(x)=\frac{x^3+8}{4}$ are inverses of each other.

28. Solve for F : $R=\sqrt{\frac{km}{F}}$

Solve for x. Be sure to check for extraneous solutions.

29. $2x^{-3/5}-7=-61$ 30. $(2x+3)^{1/3}=3$ 31. $5(3x-1)^{4/7}-7=73$

32. $2\sqrt{x+4}-1=x$ 33. $\sqrt[3]{2x-1}=\sqrt[6]{x+1}$ 34. $\sqrt{3x-2}-\sqrt{2x+5}=1$

35. Use the data set 6, 22, 4, 15, 10, 8, 8, 7, 14, 20.
Find the (a) mean, (b) median, (c) mode, (d) range, and (e) standard deviation.
Construct a box-and-whisker plot for the data.

36. The table below gives the number of children of 41 Presidents of the United States.
(a) Make a frequency distribution of the data using five intervals beginning with 0-2.
(b) Draw a histogram of the data.

Number of Children of U.S. Presidents
0, 0, 0, 0, 0, 0, 1, 1, 2, 2, 2, 2, 2, 2, 2, 2, 3, 3, 3, 3, 3,
3, 4, 4, 4, 4, 4, 4, 4, 5, 5, 5, 6, 6, 6, 6, 6, 7, 8, 10, 14

Answers: 1. $\frac{16}{81}$ 2. 9 3. $5^{11/6}$ 4. $\frac{x^{4/3}}{y}$ 5. $7^{1/3}$ 6. $6x^6\sqrt{2x}$ 7. $2ax^2\sqrt[5]{10a^2x^2}$

8. $2n^2y^2\sqrt[4]{18n}$ 9. $\sqrt[12]{8x^8}$ 10. $\sqrt[4]{2}$ 11. $\frac{2\sqrt{14x}}{7x^2}$ 12. $\frac{2\sqrt[3]{15y^2}}{3y}$ 13. $17\sqrt{5}$

14. $14\sqrt[3]{2}$ 15. $\sqrt[3]{2}$ 16. $2a\sqrt{3a^2-3b^2}$ 17. .03 18. 9, -1 19. 2.14

20. $5x^{5/8}-5x^{1/4}-3x^{3/8}+3$, $x\geq 0$ 21. $3x+x^{1/3}$; $x\neq 0$ 22. $10\sqrt[5]{x^2}-2\sqrt{x}$; $x\geq 0$

23. $6x^2-x-22$, all real numbers 24. $|x+1|$; all real numbers 25. $f^{-1}(x)=\pm\sqrt[4]{3x-6}$, $x\geq 2$

26. not a function 28. $F=\frac{km}{R^2}$ 29. $\frac{1}{243}$ 30. 12 31. 43 32. 5 33. $\frac{5}{4}$

34. 22 35. (a) 11.4 (b) 9 (c) 8 (d) 18 (e) 5.8