

Name: _____ Date: _____ Period: _____

6.1-6.2 Review

Find all the real square roots of each number.

1. 400 ± 20	2. -196 no real solutions	3. 10,000 ± 100
--------------------	------------------------------	------------------------

Find all the real cube roots of each number.

4. 216 6	5. -343 -7	6. $\frac{1000}{27}$ $\frac{10}{3}$
-------------	---------------	--

Find all the real fourth roots of each number.

7. -81 no real solutions	8. 256 ± 4	9. 625 ± 5
-----------------------------	-------------------	-------------------

Find each real root.

10. $\sqrt{144}$ ± 12	11. $-\sqrt{25}$ -5
12. $\sqrt[3]{27}$ 3	13. $\sqrt[3]{-27}$ -3

Simplify each radical expression completely.

14. $\sqrt{81x^4}$ $9x^2$	15. $\sqrt{121y^{10}}$ $11y^5$	16. $\sqrt[3]{8g^6}$ $2g^2$
17. $\sqrt[3]{125x^9}$ $5x^3$	18. $\sqrt[5]{x^5y^{15}}$ xy^3	19. $\sqrt[3]{(x-9)^3}$ $x-9$
20. $\sqrt[3]{\frac{64x^9}{343}}$ $\frac{4x^3}{7}$	21. $\sqrt[4]{\frac{x^4}{81}}$ $\frac{x}{3}$	22. $\sqrt{36x^2y^6}$ $6xy^3$

Multiply, if possible. Then simplify. Assume all variables are positive.

23. $\sqrt{4} \cdot \sqrt{25}$
 $2 \cdot 5$
 10

24. $\sqrt{3} \cdot \sqrt[3]{27}$
 $\sqrt{3} \cdot 3$
 $3\sqrt{3}$

25. $\sqrt[3]{50x^2z^5} \cdot \sqrt[3]{15y^3z}$
 $\sqrt[3]{750x^2y^3z^6}$
 $5yz^2\sqrt[3]{6x^2}$

26. $\sqrt{4} \cdot \sqrt{6}$
 $2\sqrt{6}$

27. $\sqrt[3]{-9x^2y^4} \cdot \sqrt[3]{12xy}$
 $\sqrt[3]{-108x^3y^5}$
 $-3xy\sqrt[3]{4y^2}$

28. $y\sqrt{3y^2} \cdot 2\sqrt{6x^3y}$
 $2y\sqrt{18x^3y^3}$
 $2y \cdot 3xy\sqrt{2xy}$
 $6xy^2\sqrt{2xy}$

Simplify. Assume all variables are positive.

29. $\sqrt{18k^6}$
 $3k^3\sqrt{2}$

30. $\sqrt[3]{-16a^{12}}$
 $-2a^4\sqrt[3]{2}$

31. $\sqrt[4]{256s^7t^{12}}$
 $4st^3\sqrt[4]{s^3}$

Divide and simplify. Assume all variables are positive.

32. $\frac{\sqrt{75}}{\sqrt{3}} \cdot \sqrt{25} = 5$

33. $\frac{\sqrt{63xy^3}}{\sqrt{7y}} \cdot \sqrt{9xy^2}$
 $3y\sqrt{x}$

34. $\frac{\sqrt{54x^5y^3}}{\sqrt{2x^2y}}$
 $\sqrt{27x^3y^2}$
 $3xy\sqrt{3x}$

35. $\frac{\sqrt[3]{18y^2}}{\sqrt[3]{12y}} \cdot \frac{\sqrt[3]{3y}}{\sqrt[3]{2}} \cdot \frac{\sqrt[3]{2^2}}{\sqrt[3]{2^2}}$
 $\frac{\sqrt[3]{3y^2}}{\sqrt[3]{2^3}} = \frac{\sqrt[3]{12y}}{2}$

36. $\frac{\sqrt{18x^2y}}{\sqrt{2y^3}} \cdot \frac{\sqrt{9x^2}}{\sqrt{y^2}}$
 $\frac{3x}{y}$

37. $\frac{\sqrt[3]{7xy^2}}{\sqrt[3]{4x^2}} \cdot \frac{\sqrt[3]{7y^2}}{\sqrt[3]{4x}} \cdot \frac{\sqrt[3]{y^2}}{\sqrt[3]{2^2x}}$
 $\frac{\sqrt[3]{7y^2}}{\sqrt[3]{2^2x}} \cdot \frac{\sqrt[3]{2x^2}}{\sqrt[3]{2x^2}} = \frac{\sqrt[3]{14x^2y^2}}{2x}$

38. $\frac{\sqrt{9x}}{\sqrt{2}} \cdot \frac{\sqrt{9x}}{\sqrt{2}} = \frac{3\sqrt{x}}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$
 $\frac{3\sqrt{2x}}{2}$

39. $\frac{\sqrt{xy}}{\sqrt{3x}} \cdot \frac{\sqrt{y}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$
 $\frac{\sqrt{3y}}{3}$

40. $\frac{\sqrt[3]{3a}}{\sqrt{4b^2c}} \cdot \frac{\sqrt[3]{3a}}{\sqrt[3]{4b^2c}} = \frac{\sqrt[3]{3a}}{\sqrt[3]{2^2b^2c}}$
 $\frac{\sqrt[3]{3a}}{\sqrt[3]{2^2b^2c}} \cdot \frac{\sqrt[3]{2bc^2}}{\sqrt[3]{2bc^2}} = \frac{\sqrt[3]{6abc^2}}{2bc}$