1. 16	**2.** 4	**3.** -9
4. 4	**5.** not possible	**6.** 5
7. -6	**8.** 6	**9.** $2x\sqrt{5x}$
10. $3\sqrt[3]{3x^2}$	**11.** $5x^2\sqrt{2x}$	**12.** $2a\sqrt[3]{4a^2}$
13. $3y^3\sqrt[3]{2y}$	**14.** $10a^3b^3\sqrt{2b}$	**15.** $-5x^2y\sqrt[3]{2y}$
16. $2y\sqrt[4]{4x^3y^2}$	**17.** $2\sqrt[3]{12}$	**18.** $8y^3\sqrt{5y}$
19. $7x^3y^4\sqrt{6y}$	**20.** $40xy\sqrt{3}$	**21.** $30y^2\sqrt[3]{2y}$
22. $-2x^2y\sqrt[3]{30x}$	**23.** 10	**24.** $\frac{4x}{y}$
25. $2x^2y^2\sqrt{2}$	**26.** $5x\sqrt[3]{x^2y^2}$	**27.** $\frac{\sqrt{2x}}{2}$

Nov 29-7:09 PM

37. $10\sqrt{2}$	**38.** $4\sqrt[3]{5}$	**39.** $3x^6y^5\sqrt{2y}$
40. $20x^2y^3\sqrt{y}$	**41.** $10 + 7\sqrt{2}$	**42.** $15 + 3\sqrt{21}$
43. $5 + 5\sqrt{3}$	**44.** $2x\sqrt[3]{2}$	**45.** $3x^2\sqrt[3]{x}$

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(25) $\frac{\sqrt{56x^5y^5}}{\sqrt{7xy}}$

$\sqrt{8x^4y^4}$

$2x^2y^2\sqrt{2}$

$\sqrt{8} = \sqrt{2^3 \cdot 2^1}$

$2 \quad 4$

$2 \quad 2$

$2\sqrt{2}$

Dec 2-11:33 AM

7.3 Binomial Radical Expressions

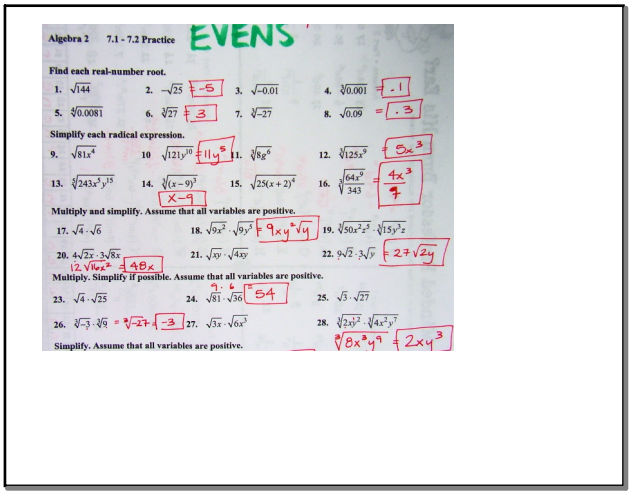
Warm Up - Simplify each expression

1) $\sqrt[3]{32x^{12}y^{14}}$

2) $\sqrt{3x} \cdot \sqrt{8x^5}$

3) $\dfrac{\sqrt[3]{48x^3y^{13}}}{\sqrt[3]{6xy^2}}$

Mar 19-7:45 AM



Algebra 2 7.1 - 7.2 Practice EVENS

Find each real-number root.

1. $\sqrt{144}$ 2. $-\sqrt{25} = -5$ 3. $\sqrt{-0.01}$ 4. $\sqrt[3]{0.001} = .1$

5. $\sqrt[4]{0.0081}$ 6. $\sqrt[3]{27} = 3$ 7. $\sqrt[3]{-27}$ 8. $\sqrt{0.09} = .3$

Simplify each radical expression.

9. $\sqrt{81x^4}$ 10. $\sqrt{121y^{10}} = 11y^5$ 11. $\sqrt[3]{8g^6}$ 12. $\sqrt{125x^9} = 5x^3$

13. $\sqrt[3]{243x^3y^{15}}$ 14. $\sqrt[4]{(x-9)^3}$ X-9 15. $\sqrt{25(x+2)^4}$ 16. $\sqrt{\frac{64x^9}{343}} = \frac{4x^3}{7}$

Multiply and simplify. Assume that all variables are positive.

17. $\sqrt{4} \cdot \sqrt{6}$ 18. $\sqrt{9x^2} \cdot \sqrt{9y^5} = 9xy^2\sqrt{y}$ 19. $\sqrt{50x^2z^3} \cdot \sqrt[3]{15y^3z}$

20. $4\sqrt{2x} \cdot 3\sqrt{8x}$ $12\sqrt{16x^2} = 48x$ 21. $\sqrt{xy} \cdot \sqrt{4xy}$ 22. $9\sqrt{2} \cdot 3\sqrt{y} = 27\sqrt{2y}$

Multiply. Simplify if possible. Assume that all variables are positive.

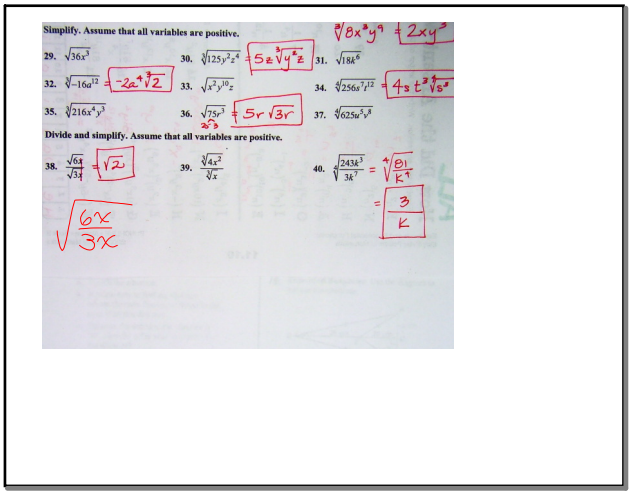
23. $\sqrt{4} \cdot \sqrt{25}$ 24. $\sqrt{81} \cdot \sqrt{36} = 54$ 25. $\sqrt{3} \cdot \sqrt{27}$

26. $\sqrt[3]{-3} \cdot \sqrt[3]{9} = \sqrt[3]{-27} = -3$ 27. $\sqrt{3x} \cdot \sqrt{6x^3}$ 28. $\sqrt[3]{2x^2} \cdot \sqrt[3]{4x^2y^7}$

Simplify. Assume that all variables are positive.

$\sqrt[3]{8x^3y^9} = 2xy^3$

Jan 23-11:23 AM



Simplify. Assume that all variables are positive.

29. $\sqrt{36x^3}$ 30. $\sqrt[3]{125y^3z^4} = 5z\sqrt[3]{y^2z}$ 31. $\sqrt{18k^6}$

32. $\sqrt[3]{-16a^{12}} = -2a^4\sqrt[3]{2}$ 33. $\sqrt{x^2y^{10}z}$ 34. $\sqrt[4]{256a^7t^{12}} = 4a\,t^3\sqrt[4]{a^3}$

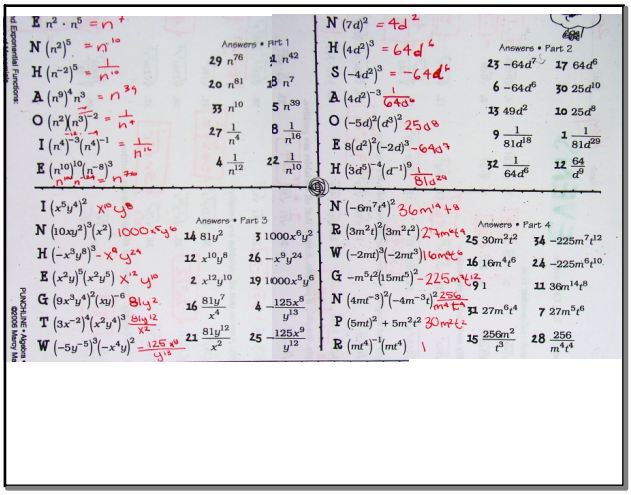
35. $\sqrt[4]{216x^4y^3}$ 36. $\sqrt{75r^3} = 5r\sqrt{3r}$ 37. $\sqrt[4]{625a^5s^8}$

Divide and simplify. Assume that all variables are positive.

38. $\frac{\sqrt{6x}}{\sqrt{3x}} = \sqrt{2}$ 39. $\frac{\sqrt[3]{4x^2}}{\sqrt[3]{x}}$ 40. $\sqrt[4]{\frac{243k^3}{3k^7}} = \sqrt[4]{\frac{81}{k^4}} = \frac{3}{k}$

$\sqrt{\frac{6x}{3x}}$

Jan 23-11:23 AM



Jan 23-11:24 AM

7.3 Binomial Radical Expressions

What are like terms in Algebra?
What is a binomial?
How are these terms related to radicals?

Which of the following are like terms in Algebra?
Click on an answer to see if it is correct.

$3x + 5x^2$

$8y^3 + 2y^2$

$9x^5 - 5x^5$

$13xy - 5xy$

$12x^2 + 5y^2$

$3x^2 - 5x^2$

Mar 19-7:45 AM

Using your knowledge of like terms in Algebra, which do you think are like radicals?

$2\sqrt{7} + 3\sqrt{7}$

$2\sqrt[3]{15} - 2\sqrt[3]{5}$

$5\sqrt{9} + 4\sqrt{9}$

$8\sqrt{3} - 3\sqrt{12}$

$3\sqrt{75} - 6\sqrt{27}$

$5\sqrt{5} + 3\sqrt{3}$

Mar 19-7:45 AM

How do you FOIL (x - 3)(x + 5)?

You do the same thing with radicals!

1) $(2+4\sqrt{3})(1-5\sqrt{3})$ FOIL

$2 - 10\sqrt{3} + 4\sqrt{3} - 20 \cdot 3$

$2 - 6\sqrt{3} - 60$

-58 - 6√3

2) $(3+\sqrt{7})(3-\sqrt{7})$

$9 - 3\sqrt{7} + 3\sqrt{7} - 7$

2

What do you notice when you multiply conjugate pairs?

slide to reveal

Mar 19-7:45 AM

More Examples

3) $(\sqrt{5}+\sqrt{6})^2 = (\sqrt{5}+\sqrt{6})(\sqrt{5}+\sqrt{6})$

11 + 2√30

4) $(\sqrt{10}+8)^2 = (\sqrt{10}+8)(\sqrt{10}+8)$

74 + 16√10

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Multiplying by the Conjugate to Rationalize the Denominator

5) $\frac{5}{(1-\sqrt{3})} \cdot \frac{(1+\sqrt{3})}{(1+\sqrt{3})} = \frac{5+5\sqrt{3}}{1-3}$

$\frac{5+5\sqrt{3}}{-2}$

6) $\frac{(5+\sqrt{2})}{(4+\sqrt{2})} \cdot \frac{(4-\sqrt{2})}{(4-\sqrt{2})}$

$\frac{20-5\sqrt{2}+4\sqrt{2}-2}{16-2} = \frac{18-\sqrt{2}}{14}$

$\frac{18-\sqrt{2}}{14}$

Mar 19-7:45 AM

HOMEWORK 7.3

p. 382 #1-35 odd

Mar 19-7:45 AM

Warm Up -
Simplify each expression

Simplify so that all exponents are positive.

1) $\sqrt[3]{32x^{12}y^{14}}$

2) $\sqrt{3x}\cdot\sqrt{8x^5}$

3) $\dfrac{\sqrt[3]{-250x^3y^{13}}}{\sqrt[3]{2x^{12}y^2}}$

4) $-\sqrt{144}$

5) $\left(3x^{-3}\right)^4\left(x^4y^3\right)^3$

6) $\left(-2x^3y\right)^3\left(-2x^{-10}\right)$

Jan 12-9:49 PM

Add or subtract if possible.

1. $5\sqrt{6}+\sqrt{6}$ 2. $6\sqrt[3]{3}-2\sqrt[3]{3}$ 3. $4\sqrt{3}+4\sqrt[3]{3}$
4. $3\sqrt{x}-5\sqrt{x}$ 5. $14\sqrt{x}+3\sqrt{y}$ 6. $7\sqrt[3]{x^2}-2\sqrt[3]{x^2}$

Simplify.

7. $6\sqrt{18}+3\sqrt{50}$ 8. $14\sqrt{20}-3\sqrt{125}$ 9. $\sqrt{18}+\sqrt{32}$
10. $\sqrt[3]{54}+\sqrt[3]{16}$ 11. $3\sqrt[3]{81}-2\sqrt[3]{54}$ 12. $\sqrt[4]{32}+\sqrt[4]{48}$

Multiply.

13. $(3+\sqrt{5})(1+\sqrt{5})$ 14. $(2+\sqrt{7})(1+3\sqrt{7})$
15. $(3-4\sqrt{2})(5-6\sqrt{2})$ 16. $(\sqrt{3}+\sqrt{5})^2$
17. $(\sqrt{13}+6)^2$ 18. $(2\sqrt{5}+3\sqrt{2})^2$

Multiply each pair of conjugates.

19. $(5-\sqrt{11})(5+\sqrt{11})$ 20. $(4-2\sqrt{3})(4+2\sqrt{3})$
21. $(2\sqrt{6}+8)(2\sqrt{6}-8)$ 22. $(\sqrt{3}+\sqrt{5})(\sqrt{3}-\sqrt{5})$

Rationalize each denominator. Simplify the answer.

23. $\frac{4}{1+\sqrt{3}}$ 24. $\frac{4}{3\sqrt{3}-2}$ 25. $\frac{5+\sqrt{3}}{2-\sqrt{3}}$ 26. $\frac{3+\sqrt{8}}{2-2\sqrt{8}}$

Jan 20-12:21 PM

Simplify. Rationalize all denominators. Assume that all the variables are positive.

27. $\sqrt{72} + \sqrt{32} + \sqrt{18}$

28. $\sqrt{75} + 2\sqrt{48} - 5\sqrt{3}$

29. $5\sqrt{32x} + 4\sqrt{98x}$

30. $\sqrt{75} - 4\sqrt{18} + 2\sqrt{32}$

31. $4\sqrt{216y^2} + 3\sqrt{54y^2}$

32. $3\sqrt[3]{16} - 4\sqrt[3]{54} + \sqrt[3]{128}$

33. $(\sqrt{3} - \sqrt{7})(\sqrt{3} + 2\sqrt{7})$

34. $(2\sqrt{5} + 3\sqrt{2})(5\sqrt{5} - 7\sqrt{2})$

35. $(1 + \sqrt{72})(5 + \sqrt{2})$

36. $(2 - \sqrt{98})(3 + \sqrt{18})$

Jan 8-12:41 PM