

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. $-5x^2y\sqrt[3]{2y^2}$
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. $\frac{\sqrt{2x}}{2}$

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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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Nov 29-7:10 PM

$$13) \sqrt[3]{54y^9} = \sqrt[3]{3^3 \cdot 2 \cdot y^9 \cdot y^0} = 3y^3\sqrt[3]{2y}$$

$$\begin{array}{ccc} & \wedge & \\ 9 & & 6 \\ \wedge & \wedge & \\ 3 & 3 & 32 \end{array}$$

$$25) \frac{\sqrt{56x^5y^5}}{\sqrt{7xy}} = \sqrt{8x^4y^4}$$

$$= \sqrt{2^3x^4y^4} = 2x^2y^2\sqrt{2}$$

$$\begin{array}{c} 2^2 \cdot 2^1 \end{array}$$

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Dec 3-11:32 AM

**7.3 Binomial Radical Expressions**

**Warm Up - Simplify each expression**

- $\sqrt[3]{32x^{12}y^{14}}$
- $\sqrt{3x} + \sqrt{8x^5}$
- $\frac{\sqrt[3]{48x^3y^{13}}}{\sqrt[3]{6xy^2}}$

Mar 19-7:45 AM

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Algebra 2 7.1 - 7.2 Practice **EVENS**

Find each real-number root.

- $\sqrt{144}$
- $-\sqrt{25}$
- $\sqrt{-0.01}$
- $\sqrt[4]{0.0001}$
- $\sqrt[4]{0.0081}$
- $\sqrt[4]{27}$
- $\sqrt{-27}$
- $\sqrt{0.09}$

Simplify each radical expression.

- $\sqrt{81x^4}$
- $\sqrt[3]{121y^{10}}$
- $\sqrt[3]{8x^9}$
- $\sqrt[3]{243x^6y^{15}}$
- $\sqrt{x-9}$
- $\sqrt{25(x+2)^4}$
- $\sqrt{\frac{64x^2}{343}}$

Multiply and simplify. Assume that all variables are positive.

- $\sqrt{4} \cdot \sqrt{6}$
- $\sqrt{9x^2} \cdot \sqrt{9y^2}$
- $\sqrt[4]{50x^2z^2} \cdot \sqrt[4]{15y^2z}$
- $4\sqrt{2x} \cdot 3\sqrt{8x}$
- $\sqrt[4]{10} \cdot \sqrt[4]{40}$
- $2\sqrt{2} \cdot 3\sqrt{2}$

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

- $\sqrt{4} \cdot \sqrt{25}$
- $\sqrt[4]{81} \cdot \sqrt[4]{56}$
- $\sqrt{5} \cdot \sqrt{27}$
- $\sqrt[3]{-3} \cdot \sqrt[3]{-9}$
- $\sqrt[3]{-27} \cdot \sqrt[3]{-3}$
- $\sqrt{5x} \cdot \sqrt{6x}$

Simplify. Assume that all variables are positive.

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

Jan 23-11:23 AM

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Simplify. Assume that all variables are positive.

- $\sqrt{36x^3}$
- $\sqrt[3]{125y^2z^4}$
- $\sqrt{18x^4}$
- $\sqrt{-16x^{12}}$
- $\sqrt{x^2y^{10}z}$
- $\sqrt{256t^4s^{12}}$
- $\sqrt[3]{216x^3y^3}$
- $\frac{\sqrt{75r^2}}{2x^3}$
- $\sqrt[3]{625u^5v^3}$

Divide and simplify. Assume that all variables are positive.

- $\frac{\sqrt{64}}{\sqrt{34}}$
- $\frac{\sqrt{4x^2}}{\sqrt{x}}$
- $\frac{\sqrt[3]{243k^3}}{3k^7} = \frac{\sqrt[3]{243k^3}}{k^7} = \frac{3}{k^4}$

Jan 23-11:23 AM

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

**You do the same thing with radicals!**

1)  $(2 + 4\sqrt{3})(1 - 5\sqrt{3})$   
 $-10\sqrt{3} + 4\sqrt{3}$      $-20\sqrt{9}$      $-58 - 6\sqrt{3}$   
 20-3     $-58 - 6\sqrt{3}$

2)  $(3 + \sqrt{7})(3 - \sqrt{7})$   
 $9 - 3\sqrt{7} + 3\sqrt{7} - \sqrt{49} = 9 - 7$      $^2$

What do you notice when you multiply conjugate pairs?

Mar 19-7:45 AM

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**More Examples**

3)  $(\sqrt{5} + \sqrt{6})^2 = (\sqrt{5} + \sqrt{6})(\sqrt{5} + \sqrt{6})$   
 $11 + 2\sqrt{30}$

4)  $(\sqrt{10} + 8)^2 = (\sqrt{10} + 8)(\sqrt{10} + 8)$   
 $74 + 16\sqrt{10}$

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**Multiplying by the Conjugate to Rationalize the Denominator**

5)  $\frac{5}{1 - \sqrt{3}}$

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

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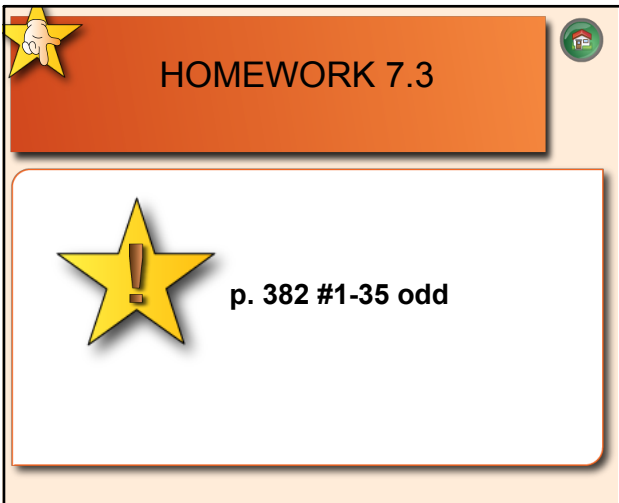
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$$\textcircled{25} \frac{(5+\sqrt{3})(2+\sqrt{3})}{(2-\sqrt{3})(2+\sqrt{3})}$$


$$\frac{10+5\sqrt{3}+2\sqrt{3}+\sqrt{9}}{4-\sqrt{9}} = \frac{10+5\sqrt{3}+2\sqrt{3}+3}{4-3}$$

$$= 13+7\sqrt{3}$$

Dec 3-12:35 PM



**HOMework 7.3**

 p. 382 #1-35 odd

Mar 19-7:45 AM

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

$$\begin{array}{c} \swarrow \quad \searrow \\ 16 \quad \underline{2} \\ \swarrow \quad \searrow \\ 4 \quad 4 \\ \textcircled{2} \quad \textcircled{2} \quad \textcircled{2} \quad \textcircled{2} \end{array} \quad \begin{array}{c} \swarrow \quad \searrow \\ 49 \quad \underline{2} \\ \swarrow \quad \searrow \\ 7 \quad 7 \end{array}$$

$$5 \cdot 2 \cdot 2 \sqrt{2x} + 4 \cdot 7 \sqrt{2x}$$

$$20\sqrt{2x} + 28\sqrt{2x}$$

$$48\sqrt{2x}$$

Dec 3-12:42 PM

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

$4 \cdot 3 \cdot 2 y \sqrt{6} + 3 \cdot 3 y \sqrt{6}$   
 $24y\sqrt{6} + 9y\sqrt{6}$

Dec 3-12:47 PM

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**Warm Up - Simplify each expression**      **Simplify so that all exponents are positive.**

1)  $\sqrt[3]{32x^{12}y^{14}}$       5)  $(3x^{-3})^4(x^4y^3)^3$

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

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

4)  $-\sqrt{144}$

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

Jan 12-9:49 PM

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**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.  $\sqrt[3]{32} + \sqrt[3]{48}$

**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.  $\frac{5 + \sqrt{2}}{2 - \sqrt{3}}$       26.  $\frac{3 + \sqrt{8}}{2 - 2\sqrt{8}}$

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**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

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