

T6-4

Stick Quiz

 $3+2i$ $3-2i$

Simplify.

1. $\sqrt{121h^6} = 11|h^3|$

2. $\sqrt[3]{-64a^3y^9} = -4ay^3$

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

$8\sqrt{3}$

4. Write the conjugate:

a. $\sqrt{2} - 1$ $\sqrt{2} + 1$

b. $x + 3$ $x - 3$

c. $10 + \sqrt{3}$ $10 - \sqrt{3}$

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$3\sqrt{75} - 2\sqrt{48} + \sqrt{3}$

$3\sqrt{3 \cdot 25} - 2\sqrt{2 \cdot 24}$

$3\sqrt{3} \sqrt{25} - 2\sqrt{2 \cdot 2 \cdot 12}$

$3 \cdot 5\sqrt{3} - 2\sqrt{2 \cdot 2 \cdot 4 \cdot 3}$

$15\sqrt{3} - 2\sqrt{2^2 \cdot 2^2 \cdot 3}$

$15\sqrt{3} - 2(2)(2)\sqrt{3} + \sqrt{3}$

$15\sqrt{3} - 8\sqrt{3} + \sqrt{3}$
 $8\sqrt{3}$

$\sqrt{75} = 5\sqrt{3}$

$3 \sqrt{25}$

$5 \sqrt{5}$

$\sqrt{48}$

$2 \sqrt{24}$

$2 \sqrt{12}$

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

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? ? ?
? Questions ?
? on ? ? ?
? Homework ?
? ? ?
? ? ?

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Target 6-4

Continued

I can... simplify radical expressions by adding, subtracting, multiplying and dividing.

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Product Rule:

1. Simplify $\sqrt{25a^4b^9}$

$$\begin{array}{l} \sqrt{25} \cdot \sqrt{a^4} \cdot \sqrt{b^9} \\ \sqrt{5^2} \sqrt{a^4} \sqrt{b^9} \\ 5 a^2 b^4 \sqrt{b} \end{array} \quad \begin{array}{l} \sqrt{b^8} \sqrt{b} \\ \sqrt{b^8} \sqrt{b} \end{array}$$

$$\begin{array}{l} \sqrt[3]{25a^4b^9} \\ \sqrt[3]{5^2} \sqrt[3]{a^4} \\ \sqrt[3]{a^3} \sqrt[3]{a} \\ b^3 a \sqrt[3]{5^2 a} \end{array} \quad \begin{array}{l} \sqrt[3]{b} \sqrt[3]{b} \sqrt[3]{b} \\ b \ b \ b \end{array}$$

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2. Simplify $\sqrt[3]{125m^{30}p^{20}}$

SPLIT

3. $\sqrt[4]{625b^{28}k^{23}}$

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$$\sqrt{3} \cdot \sqrt{3} = 3$$

$$\sqrt{9}$$

$$\sqrt{3^2}$$

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Rationalizing the denominator.

$$1. \frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

$\sqrt{2^2}$

$$2. \frac{2}{\sqrt{200}} = \frac{2}{10\sqrt{2}} = \frac{1 \cdot \sqrt{2}}{5\sqrt{2} \cdot \sqrt{2}}$$

$\sqrt{2 \cdot 100}$

$$3. \frac{y^8}{\sqrt{x}} \cdot \frac{\sqrt{x}}{\sqrt{x}} = \frac{y^8 \sqrt{x}}{x}$$

$$4. \frac{x^8}{\sqrt{x^5}} = \frac{x^8}{x^2 \sqrt{x}}$$

$$= \frac{x^6 \sqrt{x}}{\sqrt{x} \sqrt{x}}$$

$$= \frac{x^6 \sqrt{x}}{x}$$

$$= x^5 \sqrt{x}$$

$\sqrt{x^5} = \sqrt{x^4 x}$
 $x^2 \sqrt{x}$

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You Try!

① $\frac{1}{\sqrt{12}}$

② $\frac{2}{\sqrt{300}}$

③ $\frac{1}{3\sqrt{2}}$

④ $\frac{1}{\sqrt{x^3}}$

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Quotient Rule:

4. Simplify $\sqrt{\frac{y^8}{x^7}}$ SPLIT $\frac{\sqrt[2]{y^8}}{\sqrt[2]{x^7}} = \frac{y^4}{\sqrt[2]{x^6}\sqrt{x}} = \frac{y^4}{x^3\sqrt{x}}$

$$= \frac{y^4}{x^3\sqrt{x}} \cdot \frac{\sqrt{x}}{\sqrt{x}} = \frac{y^4\sqrt{x}}{x^4}$$

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5. Simplify $\sqrt[3]{\frac{2}{9x}}$

SPLIT $\frac{\sqrt[3]{2}}{\sqrt[3]{9x}}$

get #'s into
prime
factors!

$$\frac{\sqrt[3]{2}}{\sqrt[3]{3^2 x^1}} \cdot \frac{\sqrt[3]{3x^2}}{\sqrt[3]{3x^2}}$$

$$\frac{\sqrt[3]{6x^2}}{\sqrt[3]{3^3 x^3}} = \frac{\sqrt[3]{6x^2}}{3x}$$

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6. $\sqrt[3]{\frac{8}{3y^2}}$

$$= \frac{\sqrt[3]{2^3}}{\sqrt[3]{3y^2}} = \frac{2}{\sqrt[3]{3y^2}} \cdot \frac{\sqrt[3]{3^2 y^1}}{\sqrt[3]{3^2 y^1}}$$

$$\frac{2\sqrt[3]{3^2 y}}{\sqrt[3]{3^3 y^3}} = \frac{2\sqrt[3]{9y}}{3y}$$

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$$\sqrt[4]{\frac{6}{5x}} =$$

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Multiplying Radicals

7. Simplify $5\sqrt[3]{100a^2} \cdot \sqrt[3]{10a}$

SQUISH

$$5\sqrt[3]{100(10)a^2 \cdot a}$$

$$5\sqrt[3]{10^3 a^3}$$

$$5 \cdot 10a$$

$$50a$$

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8. Simplify $3\sqrt[3]{16a^2} \cdot 2\sqrt[3]{4a}$

SQUISH

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9. Simplify $(2\sqrt{3} + 3\sqrt{5})(3 - \sqrt{3})$

FOIL

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

-2 · 3

$$6\sqrt{3} - 6 + 9\sqrt{5} - 3\sqrt{15}$$

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10. Simplify $(2\sqrt{5} + 4\sqrt{6})(5 - \sqrt{7})$

FOIL

11. $(3 - \sqrt{5})(3 + \sqrt{5})$

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Homework 6.5**Pg. 419****#19-390, 45-490, 60**

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6b. $\sqrt{\frac{1}{108} x^6 y^9}$

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You Try!! Simplify

6c. $\sqrt{\frac{1}{50} m^{13} n^{14}}$

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Simplify

12. $\frac{x}{x\sqrt{3} + x}$

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Rationalize the Denominator

11. $\frac{a}{a\sqrt{2} - a}$

Multiply Conjugate

Pull out GCF

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