

Simplify.

$$\begin{aligned} & (8 + 3\sqrt{2})^2 \\ & (8 + 3\sqrt{2})(8 + 3\sqrt{2}) \\ & 64 + 24\sqrt{2} + 24\sqrt{2} + 18 \\ & \boxed{82 + 48\sqrt{2}} \end{aligned}$$

You can now finish Hwk #6

Sec 7-3

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Due Tomorrow

Problems 9, 10, 12, 14-17, 30, 32

Simplify.

$$\begin{aligned} & (2\sqrt{6} - 5\sqrt{3})^2 \\ & \begin{array}{cc|c} & 2\sqrt{6} & -5\sqrt{3} \\ 2\sqrt{6} & 24 & -10\sqrt{18} \\ -5\sqrt{3} & -10\sqrt{18} & 75 \end{array} \left. \vphantom{\begin{array}{cc|c} & 2\sqrt{6} & -5\sqrt{3} \\ 2\sqrt{6} & 24 & -10\sqrt{18} \\ -5\sqrt{3} & -10\sqrt{18} & 75 \end{array}} \right\} \rightarrow 99 - 20\sqrt{18} \Rightarrow 99 - 20\sqrt{9 \cdot 2} \\ & = 99 - 20 \cdot 3\sqrt{2} \\ & = \boxed{99 - 60\sqrt{2}} \end{aligned}$$

Remember what the result **ALWAYS** is when you expand $(a + b)(a - b) = \boxed{a^2 - b^2}$

These factors are called conjugates

Expand and simplify.

$$\begin{aligned} & (7 + \sqrt{5})(7 - \sqrt{5}) \\ & a^2 - b^2 \\ & = (7)^2 - (\sqrt{5})^2 \\ & = 49 - 5 = \boxed{44} \end{aligned}$$

Expand.

$$(4 + \sqrt{7})(4 - \sqrt{7})$$

$$a^2 - b^2$$

$$= (4)^2 - (\sqrt{7})^2$$

$$= 16 - 7$$

$$= 9$$

Expand.

$$(3 + 2\sqrt{6})(3 - 2\sqrt{6})$$

$$a^2 - b^2$$

$$(3)^2 - (2\sqrt{6})^2$$

$$= 9 - 4 \cdot 6$$

$$= 9 - 24$$

$$= -15$$

Simplify.

$$(8\sqrt{3} - \sqrt{2})(8\sqrt{3} + \sqrt{2})$$

$$(8\sqrt{3})^2 - (\sqrt{2})^2$$

$$\begin{array}{l} 64 \cdot 3 \\ \hline 192 - 2 = 190 \end{array}$$

Rationalize this denominator:

$$\frac{(24 + \sqrt{6})}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$$

$$= \frac{24\sqrt{2} + \sqrt{12}}{2}$$

$$= \frac{24\sqrt{2} + 2\sqrt{3}}{2}$$

$$= 12\sqrt{2} + \sqrt{3}$$

Rationalize the denominator.

$$\frac{24}{(2 - \sqrt{7})} \cdot \frac{(2 + \sqrt{7})}{(2 + \sqrt{7})}$$

$$a^2 - b^2$$

$$(2)^2 - (\sqrt{7})^2 = 4 - 7$$

To rationalize a denominator involving a sum or difference involving square roots you multiply the numerator and denominator by the

Conjugate of the Denominator.
 $2 + \sqrt{7}$

$$= \frac{24(2 + \sqrt{7})}{-3}$$

You can simplify this two ways:

$$\frac{24(2 + \sqrt{7})}{-3}$$

Divide then distribute

$$-8(2 + \sqrt{7})$$

$$= -16 - 8\sqrt{7}$$

$$\frac{24(2 + \sqrt{7})}{-3}$$

Distribute then divide

$$\frac{48 + 24\sqrt{7}}{-3}$$

$$= -16 - 8\sqrt{7}$$

Rationalize the denominator.

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

$$\frac{33 + 11\sqrt{5} + 3\sqrt{5} + 5}{9 - 5}$$

$$\frac{38 + 14\sqrt{5}}{4}$$

$$\boxed{\frac{19 + 7\sqrt{5}}{2}}$$

Rationalize the denominator.

$$\frac{\sqrt{6} - \sqrt{2}}{5\sqrt{3} + 2} \cdot \frac{5\sqrt{3} - 2}{5\sqrt{3} - 2} = \frac{17\sqrt{2} - 7\sqrt{6}}{71}$$

$$(5\sqrt{3})^2 - (2)^2$$

$$25 \cdot 3 - 4$$

$$75 - 4 = 71$$

	$\sqrt{6}$	$-\sqrt{2}$
$5\sqrt{3}$	$5\sqrt{18}$	$-5\sqrt{6}$
-2	$-2\sqrt{6}$	$2\sqrt{2}$