Simplify.

$2\sqrt{6}(5\sqrt{3} - 4\sqrt{10})$

$2\sqrt{6}\cdot 5\sqrt{3} - 2\sqrt{6}\cdot 4\sqrt{10}$

$10\sqrt{18} - 8\sqrt{60}$

$\sqrt{18} = \sqrt{9\cdot 2}$, $\sqrt{60} = \sqrt{4\cdot 15}$

$10\cdot 3\sqrt{2}$ $\quad -8\cdot 2\sqrt{15}$

$30\sqrt{2} - 16\sqrt{15}$

Sec 7-3: Binomial Radical Expressions.

Simplify. $(3 + \sqrt{10})(4 - \sqrt{10})$

	3	$+\sqrt{10}$
4	12	$+4\sqrt{10}$
$-\sqrt{10}$	$-3\sqrt{10}$	-10

$\Rightarrow 2 + \sqrt{10}$

Simplify.

$(6 - 2\sqrt{7})(5 - 4\sqrt{7})$

	6	$-2\sqrt{7}$
5	30	$-10\sqrt{7}$
$-4\sqrt{7}$	$-24\sqrt{7}$	$8\cdot 7 = 56$

$= 86 - 34\sqrt{7}$

Multiply.

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

	5	$-\sqrt{2}$
6	30	$-6\sqrt{2}$
$+\sqrt{3}$	$+5\sqrt{3}$	$-\sqrt{6}$

$= 30 - 6\sqrt{2} + 5\sqrt{3} - \sqrt{6}$

since the radicals are different there are no like terms

Multiply. $(3-7\sqrt{2})^2$

	3	$-7\sqrt{2}$
3	9	$-21\sqrt{2}$
$-7\sqrt{2}$	$-21\sqrt{2}$	$+49\cdot2 = +98$

$= 107 - 42\sqrt{2}$

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

$(a+b)^2 = a^2+2ab+b^2$

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

$= 9 - 42\sqrt{2} + 49\cdot2$

$= 9 - 42\sqrt{2} + 98$

$= 107 - 42\sqrt{2}$

Simplify. $(\sqrt{6}-\sqrt{7})^2$

a b

$(\sqrt{6})^2 - 2(\sqrt{6})(\sqrt{7}) + (\sqrt{7})^2$

$6 - 2\sqrt{42} + 7$

$13 - 2\sqrt{42}$

Rememeber the result when you expand
$(a + b)(a - b)$ is ALWAYS $= a^2 - b^2$

These factors are called conjugates

Expand and simplify.

$(7+\sqrt{5})(7-\sqrt{5})$

a b

$= (7)^2 - (\sqrt{5})^2$

$= 49 - 5 = 44$

Simplify.

$(\sqrt{11}+9)(\sqrt{11}-9)$

a b

$= (\sqrt{11})^2 - (9)^2$

$= 11 - 81$

$= -70$

Simplify.

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

$a \quad b$

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

$= 9 \cdot 2 - 64$

$= 18 - 64$

$= \boxed{-46}$

Simplify.

$(7\sqrt{2} - 5\sqrt{6})(7\sqrt{2} + 5\sqrt{6})$

$a \quad b$

$= (7\sqrt{2})^2 - (5\sqrt{6})^2$

$= 49 \cdot 2 - 25 \cdot 6$

$= 98 - 150 = \boxed{-52}$

Rationalize this denominator:

$$\frac{8 - \sqrt[3]{5}}{\sqrt[3]{5}} \cdot \frac{\sqrt[3]{5^2}}{\sqrt[3]{5^2}} = \frac{8\sqrt[3]{5^2} - \sqrt[3]{5^3}}{\sqrt[3]{5^3}}$$

$$= \boxed{\frac{8\sqrt[3]{5^2} - 5}{5}}$$

Rationalize the denominator.

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

$2^2 - (\sqrt{7})^2 = 4 - 7 = -3$

$$= \frac{48 + 24\sqrt{7}}{-3} = \boxed{-16 - 8\sqrt{7}}$$

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

Conjugate of the Denominator.

Rationalize the denominator.

$$\frac{11+\sqrt{5}}{3-4\sqrt{5}} \cdot \frac{3+4\sqrt{5}}{3+4\sqrt{5}} = \frac{53+47\sqrt{5}}{-71}$$

	11	$+\sqrt{5}$
3	33	$3\sqrt{5}$
$4\sqrt{5}$	$44\sqrt{5}$	$4\cdot 5 = 20$

$$3^2-(4\sqrt{5})^2$$

$$= 9 - 16\cdot 5$$

$$= 9 - 80 = -71$$

You can now finish Hwk #19 Sec 7-3

Page 382

Problems 15, 16, 21, 22, 24, 25, 30, 32, 36, 40