Algebra 2
Ch. 7 Handout 7.3
Binomial Radical Expressions

Nov 6-5:53 PM

Multiplying radicals expressions that are in the form of binomials by using FOIL.

3. Multiply each binomial radical expression.

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

F O I L

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

$2+-10\sqrt{3}+4\sqrt{3}+-20\sqrt{9}$

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

$-58-6\sqrt{3}$

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

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

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

$\sqrt{4}+-\sqrt{6}+-\sqrt{6}+\sqrt{9}$

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

$5-2\sqrt{6}$

Nov 6-6:11 PM

4. Multiplying Conjugates

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

F O I L

$9+-3\sqrt{7}+3\sqrt{7}+-\sqrt{49}$

$9+-7$

2

b) $(\sqrt{5}-\sqrt{2})(\sqrt{5}+\sqrt{2})$

F O I L

$\sqrt{25}+\sqrt{10}-\sqrt{10}-\sqrt{4}$

$5-2$

3

Nov 6-6:14 PM

5. Rationalize the denominator.

a) $\dfrac{(6+\sqrt{15})(4+\sqrt{15})}{(4-\sqrt{15})(4+\sqrt{15})}$

$\dfrac{24+6\sqrt{15}+4\sqrt{15}+\sqrt{225}}{16+4\sqrt{15}-4\sqrt{15}-\sqrt{225}}$

$\dfrac{24+10\sqrt{15}+15}{16-15}$

$\dfrac{39+10\sqrt{15}}{1}$

$39+10\sqrt{15}$

b) $\dfrac{(8+\sqrt{6})(2\sqrt{2}-\sqrt{3})}{(2\sqrt{2}+\sqrt{3})(2\sqrt{2}-\sqrt{3})}$ ($\sqrt{4\cdot3}$, $\sqrt{9\cdot2}$)

$\dfrac{16\sqrt{2}-8\sqrt{3}+2\sqrt{12}-\sqrt{18}}{4\sqrt{4}-2\sqrt{6}+2\sqrt{6}-\sqrt{9}}$

$\dfrac{16\sqrt{2}-8\sqrt{3}+4\sqrt{3}-3\sqrt{2}}{8-3}$

$\dfrac{13\sqrt{2}-4\sqrt{3}}{5}$

Nov 6-6:17 PM

5. Rationalize the denominator.

c) $\dfrac{(1+2\sqrt{2})(-2+3\sqrt{2})}{(-2-3\sqrt{2})(-2+3\sqrt{2})}$

$\dfrac{-2+3\sqrt{2}+-4\sqrt{2}+6\sqrt{4}}{4-6\sqrt{2}+6\sqrt{2}-9\sqrt{4}}$

$\dfrac{-2-\sqrt{2}+12}{4-18}$

$\dfrac{10-\sqrt{2}}{-14}=\dfrac{10}{-14}+\dfrac{-\sqrt{2}}{-14}=\dfrac{-5}{7}+\dfrac{\sqrt{2}}{14}$

d) $\dfrac{(6+\sqrt[3]{2})\sqrt[3]{4}}{\sqrt[3]{2}\ \sqrt[3]{4}}$

$\dfrac{6\sqrt[3]{4}+\sqrt[3]{8}}{\sqrt[3]{8}}$

$\dfrac{6\sqrt[3]{4}+2}{2}=\dfrac{6\sqrt[3]{4}}{2}+\dfrac{2}{2}$

$=3\sqrt[3]{4}+1$

Nov 6-6:19 PM

Assignment:

[redacted]

Day 2: pgs 382-384 ~~13-26~~, 14-26 evens
33-44,51,52,~~59-62~~

Mar 8-7:40 AM