Beginning Algebra ~ Lesson 35

Work the following examples as you listen to the recorded lecture.

Factoring Binomials (Cubes)

Learn the cubes:	Factor	1	2	3	4	5
	Cube	1	8	27	64	125

<u>Cubes:</u>

Problem type: $a^3 + b^3$ and $a^3 - b^3$ (Where a and b are numbers or unknowns.) These are your formulas and sign rules:

Sum of Cubes: Difference of Cubes: $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$ $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$

Notice: You have 3 signs.

- 1. The first sign matches the problem.
- 2. The second sign is the opposite of the problem.
- 3. The third sign is always positive.

Example 1: $x^3 + 8$	Sum of Cubes problem $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$
()()	Step 1: Set signs for the factors.
a =	Step 2: Find the cube root of a^3 and b^3 .
b =	
a ² =	Step 3: Square a and b.
<i>b</i> ² =	
$a \cdot b = $	Step 4: Multiply a times b.
	Step 5: Fill in the fields for your formula Step 6: Multiply to check.

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Example 2: $27x^3 - 64$	Difference of Cubes problem $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$
()()	Step 1: Set signs for the factors.
a = b =	Step 2: Find the cube root of a^3 and b^3 .
$a^2 = ___ b^2 = ___$	Step 3: Square a and b.
a · b =	Step 4: Multiply a times b.
	Step 5: Fill in the fields for your formula
	Step 6: Multiply to check.

Example 3: $125x^3 - 27$	Difference of Cubes problem $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$
()()	Step 1: Set signs for the factors.
a = b =	Step 2: Find the cube root of a^3 and b^3 .
$a^2 = _ b^2 = _$	Step 3: Square a and b.
$a \cdot b = _$	Step 4: Multiply a times b.
	Step 5: Fill in the fields for your formula
	Step 6: Multiply to check.

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Example 4: $2x^3 + 16$	Sum of Cubes problem $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$
()()	Step 1: Set signs for the factors.
a = b =	Step 2: Find the cube root of a^3 and b^3 .
$a^2 = _ b^2 = _$	Step 3: Square a and b.
a · b =	Step 4: Multiply a times b.
	Step 5: Fill in the fields for your formula
	Step 6: Multiply to check.

Example 5: $27x^4y^5 - xy^2$	Difference of Cubes problem $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$
()()	Step 1: Set signs for the factors.
a = b =	Step 2: Find the cube root of a^3 and b^3 .
$a^2 = _ b^2 = _$	Step 3: Square a and b.
$a \cdot b = _$	Step 4: Multiply a times b.
	Step 5: Fill in the fields for your formula
	Step 6: Multiply to check.