

MHF 4UI
Unit 1 Polynomials
Day 4 - Sum and Difference of Cubes

Review: Difference of Squares:

Factor

a) $y^2 - 100$

b) $4y^2 - 9x^4$

Example 1: Factor the following:

a) $x^3 - 8$

b) $x^3 - 216$

Pattern (for DIFFERENCE of cubes:)

$$a^3 - b^3 = (a - b)(a^2 + ab + b^2)$$

Note: This also works for the SUM of cubes:

$$a^3 + b^3 = (a + b)(a^2 - ab + b^2)$$

Example 2: Factor the following:

a) $64 - 8x^3$

b) $\frac{x^3}{8} - 1$

c) $c^3 + 125d^3$

d) $(x + 2)^3 - 27$