13.3 – Factoring Sum & Difference of Cubes

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

Example 1: Factor $x^3 - 8$.

$$a = x \quad b = 2$$

$$x^3 - 8 = (x-2)(x^2 + 2x + 4)$$

Example 2: Factor $27x^3 + 1$.

$$a = 3x \quad b = 1$$

$$27x^3 + 1 = (3x+1)(9x^2 - 3x + 1)$$