

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

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

2.)  $27x^3 + 64 = (3x+4)(9x^2 - 12x + 16)$   
 $(3x)^3 + 4^3$

3.)  $x^3 + 216 = (x+6)(x^2 - 6x + 36)$   
 $x^3 + 6^3$

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

4.)  $x^3 - 64 = (x-4)(x^2 + 4x + 16)$   
 $x^3 - 4^3$

5.)  $8x^3 - 125 = (2x-5)(4x^2 + 10x + 25)$   
 $(2x)^3 - 5^3$

6.)  $8x^3 - 1 = (2x-1)(4x^2 + 2x + 1)$   
 $(2x)^3 - 1^3$

$$7.) \text{ Simplify: } \frac{8x^3 - 1}{8x^2 + 4x + 2} = \frac{(2x-1)(4x^2 + 2x + 1)}{2(4x^2 + 2x + 1)} = \boxed{\frac{2x-1}{2}}$$

~~8.) Simplify:  $\frac{a+4}{8a+64}$~~