Lesson 1.7 Factoring Perfect Cubes

Factoring Sums and Differences of Cubes

Algebra 2R

- Cubed Numbers: $1^3, 2^3, 3^3, 4^3, 5^3$

$1, 8, 27, 64, 125$

actual variable/number being cubed

- Sum of Cubes: $A^3 + B^3 = (A + B)(A^2 - AB + B^2)$

1. $x^3 + 8$

$8 = 2^3$

$A = x$

$B = 2$

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

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

2. $125x^3 + 27$

$A = 5x$

$B = 3$

$125x^3 + 27 = (5x+3)((5x)^2 - 5x(3) + 3^2)$

$= (5x+3)(25x^2 - 15x + 9)$

- Difference of Cubes: $A^3 - B^3 = (A - B)(A^2 + AB + B^2)$

3. $1 - x^3$

$-x^3 + 1$

$A = x$

$B = 1$

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

$= -(x-1)(x^2 + x + 1)$