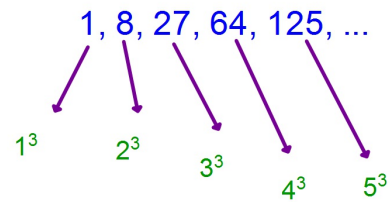


Perfect Cubes



Factoring the difference of perfect cubes:

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

Factor the following:

1. $8x^3 - 125 = (2x - 5)(4x^2 + 10x + 25)$

$$a = 2x$$

$$b = 5$$

Factor:

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

$$a = 3m$$

$$b = 4$$

Is there a way to factor the sum of perfect cubes?

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

Factor the following:

1. $64x^3 + 1 = (4x + 1)(16x^2 - 4x + 1)$

$$a = 4x$$

$$b = 1$$

Factor:

$$2. \quad 125m^3 + 216p^3 = (5m+6p)(25m^2-30mp+36p^2)$$

$$a = 5m$$

$$b = 6p$$

Solving equations using the sum/diff of cubes formulas:

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

These Quadratics are NEVER factorable.

You must use the Quadratic Formula to find these two solutions

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

Find ALL solutions, real and imaginary by factoring

$$8x^3 + 1 = 0$$

$$a = 2x$$

$$b = 1$$

$$(2x+1)(4x^2-2x+1)$$
$$\frac{2 \pm \sqrt{-12}}{8} = \frac{2 \pm 2i\sqrt{3}}{8}$$

$$x = -\frac{1}{2}, \frac{1 \pm i\sqrt{3}}{4}$$

Find ALL solutions, real and imaginary by factoring

$$27d^3 - 64 = 0$$

$$a = 3x$$

$$b = 4$$

$$(3x-4)(9x^2+12x+16)$$
$$\frac{-12 \pm \sqrt{-432}}{18} \rightarrow \frac{-12 \pm 12i\sqrt{3}}{18}$$
$$x = \frac{4}{3}, \frac{-2 \pm 2i\sqrt{3}}{3}$$

$$x = \frac{4}{3}, \frac{-2 \pm 2i\sqrt{3}}{3}$$

You can now finish Hwk #30: Sec 6-4

Pages 330-331

Problems 12, 14, 16, 45, 48, 54, 57

Due tomorrow