

Feb. 26, 2018

Sect. 5-5

Difference of Squares

Memorize these numbers

1, 4, 9, 16, 25, 36, 49, 64, 81, 100

$1^2, 2^2, 3^2, 4^2, 5^2, 6^2, 7^2, 8^2, 9^2, 10^2$

121, 144, 169, 196, 225

$11^2, 12^2, 13^2, 14^2, 15^2$

# Difference of Squares

Minus

Rule:

$$a^2 - b^2$$

$$(a)^2 - (b)^2$$

$$(a+b)(a-b)$$

$$\text{Factor: } x^2 - 9$$

$$(x)^2 - (3)^2$$

$$(x + 3)(x - 3)$$

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$$x^2 - 16$$

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

$$(x + 4)(x - 4)$$

$$\begin{aligned}x^2 - 49 \\(x)^2 - (7)^2 \\(x + 7)(x - 7)\end{aligned}$$

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$$\begin{aligned}4x^2 - 25 \\(2x)^2 - (5)^2 \\(2x + 5)(2x - 5)\end{aligned}$$

$$\begin{aligned} &9x^2 - 4y^2 \\ &(3x)^2 - (2y)^2 \\ &(3x + 2y)(3x - 2y) \end{aligned}$$

$$\begin{aligned} & 2x^2 - 32 \\ & 2[x^2 - 16] \\ & 2[(x)^2 - (4)^2] \\ & 2(x+4)(x-4) \end{aligned}$$

## Perfect Sq. Tri.

$$x^2 - 6x + 9$$

$$(x-3)(x-3)$$

3	9
3	3
-3	-3

$$x^2 - 6x + 9$$

$$(x)^2 - 6x + (3)^2$$

$$(x-3)^2$$



$$4x^2 + 20x + 25$$
$$(2x)^2 + 20x + (5)^2$$

$$(2x + 5)^2$$

$$\begin{aligned} &9x^2 - 42x + 49 \\ &(3x)^2 - 42x + (7)^2 \\ &(3x - 7)^2 \end{aligned}$$

$$\begin{aligned} &2x^2 + 16x + 32 \\ &2[x^2 + 8x + 16] \\ &2[(x)^2 + 8x + (4)^2] \\ &2(x + 4)^2 \end{aligned}$$

## Sum or Difference of Cubes

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

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

Remember SOAP

Factor  $x^3 + 8$

$$(x)^3 + (2)^3$$

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

$$\begin{aligned}8x^3 - 27 \\(2x)^3 - (3)^3 \\(2x - 3)(4x^2 + 6x + 9)\end{aligned}$$

$$\begin{aligned} & 2x^3 - 16y^3 \\ & 2[x^3 - 8y^3] \\ & 2[(x)^3 - (2y)^3] \\ & 2(x - 2y)(x^2 + 2xy + 4y^2) \end{aligned}$$