

M10 - 5.4 - Differences of Squares Notes

Differences of Squares: A Subtraction Sign in Between two Squared Things

$$x^2 - 9$$

$$(+)(-)$$

Step 1 Set Up Two Sets of Brackets with a +(Plus) and a - (Minus) Sign.

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

Step 2 What squared is x^2 ? x . That answer goes first in each set of brackets.

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

Step 3 What squared is 9? 3. That number goes second in each set of brackets.

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

$$x^2 - 3x + 3x - 9$$

$$x^2 - 9$$



In your Head

FOIL

$x^2 + 4$	Cannot Factor a Sum of Squares
Cannot Factor	

$$4x^2 - 36$$

$$4(x^2 - 9)$$

$$4(x + 3)(x - 3)$$

GCF

Factor

$$4(x + 3)(x - 3)$$

$$4(x^2 - 3x + 3x - 9)$$

$$4(x^2 - 9)$$

$$4x^2 - 36$$



FOIL

$x^4 - 1$ $(x^2 - 1)(x^2 + 1)$	$x^4 = x^2 \times x^2$ Factor Twice
$(x + 1)(x - 1)(x^2 + 1)$	
$x^4 - 81$ $(x^2 - 9)(x^2 + 9)$	$a^4 - b^4$ $(a^2 + b^2)(a^2 - b^2)$ $(a^2 + b^2)(a + b)(a - b)$
$(x + 3)(x - 3)(x^2 + 9)$	

$$4x^2 - 49$$

$$(2x)^2 - 7^2$$

$$(2x + 7)(2x - 7)$$

Figure Out what is being Squared

Change of base

Do this in your Head

Factor

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

$$9x^2 - y^2$$

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

$$9x^2 = (3x)^2$$

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

Factor

$$(2x + 7)(2x - 7)$$

$$4x^2 - 14x + 14x - 49$$

$$4x^2 - 49$$



FOIL

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

$$9x^2 - 3xy + 3xy - y^2$$

$$9x^2 - y^2$$

FOIL



$$-x^2 + 49$$

$$49 - x^2$$

$$(7 + x)(7 - x)$$

Rearrange

Factor

$$49 - x^2$$

$$-(-49 + x^2)$$

$$-(x^2 - 49)$$

$$-(x - 7)(x + 7)$$

GCF= -1

Rearrange

Factor

$$(7 + x)(7 - x)$$

$$49 - 7x + 7x - x^2$$

$$49 - x^2$$

FOIL

$$-(x^2 + 7x - 7x - 49)$$

$$-(x^2 - 49)$$

$$-x^2 + 49$$

$$49 - x^2$$

FOIL

$$(1 - x^{10})$$

$$(1 - x^5)(1 + x^5)$$