

# Special Products of Polynomials

"Difference of 2 Squares":

Practice → FOIL  $(x+5)(x-5)$   
 $x^2 - 5x + 5x - 25$   
 $x^2 - 25$

Rule:

Square the first term (same in both) then SUBTRACT the square of the last term(s)

Example #1 →  $(x-4)(x+4)$

$$x^2 - 16$$

"Binomial Squares (perfect sq)":

Practice → FOIL  $(x+3)(x+3)$   
 $x^2 + 3x + 3x + 9$   
 $x^2 + 6x + 9$

Rule:

Square the 1st term + double the product of outer terms + square the last terms

Example #2 →  $(x+6)(x+6)$

$$(6x)^2 \quad x^2 + 12x + 36$$

## More Practice Examples..

Multiply the following binomials by using the rules for special products:

3)  $(x + 7)(x - 7)$       4)  $(x - 8)^2 = (x-8)(x-8)$   
 $x^2 - 49$                        $x^2 - 16x + 64$

5)  $(5x - 7y)(5x + 7y)$       6)  $(2a^2 + 3b)(2a^2 + 3b)$   $(6a^2b)^2$   
 $25x^2 - 49y^2$                        $4a^4 + 12a^2b + 9b^2$

## "Multiplying Functions":

7) Perform the indicated operation using the functions  $f(x) = 3x + 0.5$  and  $g(x) = 3x - 0.5$

a)  $f(x) \cdot g(x)$

$$(3x + 0.5)(3x - 0.5)$$

$$9x^2 - .25$$

b)  $(f(x))^2$

$$(3x + 0.5)^2$$

$$(3x + 0.5)(3x + 0.5)$$

$$9x^2 + 3x + .25$$

$$(1.5x)^2$$

## 9.3 Practice B

#5 1-27

#1  $(x-9)^2$   
 $(x-9)(x-9)$