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10.3 Special products

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10.3 Special Products of Polynomials

Example: Multiply the following special polynomials.

A) $(y + 3)(y - 3)$

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

$y^2 - 9$

B) $(4a - 5)^2$

$(4a-5)(4a-5)$

$16a^2 - 20a - 20a + 25$

$16a^2 - 40a + 25$

C) $(x + 4)^2$

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

$x^2 + 4x + 4x + 16$

$x^2 + 8x + 16$

Your Turn:

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

$x^2 - 2x + 2x - 4$

$x^2 - 4$

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

$4x^2 + 2x - 2x - 1$

$4x^2 - 1$

3) $(x + 1)^2$

$(x+1)(x+1)$

$x^2 + 1x + 1x + 1$

$x^2 + 2x + 1$

4) $(a - 7)^2$

$(a-7)(a-7)$

$a^2 - 7a - 7a + 49$

$a^2 - 14a + 49$

5) $(2x + 1)^2$

$(2x+1)(2x+1)$

$4x^2 + 2x + 2x + 1$

$4x^2 + 4x + 1$

6) $(3a - 4)^2$

$(3a-4)(3a-4)$

$9a^2 - 12a - 12a + 16$

$9a^2 - 24a + 16$

Example: Factor the "Difference of Two Squares"

D) $x^2 - 16$

$x^2 - 0x - 16$

$a \times b = -16$

$a + b = 0$

$a = 4 \quad b = -4$

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

E) $m^2 - 121$

Find $\sqrt{121}$

$(m + 11)(m - 11)$

Your Turn:

7) $n^2 - 36$

$(n+6)(n-6)$

8) $r^2 - 25$

$(r-5)(r+5)$

9) $x^2 - 1$

$(x+1)(x-1)$