

(27) $(-8n^2 - n + 7)(5n + 4)$

$$-40n^3 - 32n^2$$

$$-5n^2 - 4n$$

$$35n + 28$$



$$-40n^3 - 37n^2 + 31n + 28$$

(29) $(x^2 + 2xy + y^2)(x - 2y)$

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

$$-2x^2y - 4xy^2 - 2y^3$$

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

$$(30) (6m^2 - 8mn + 4n^2)(8m + 8n)$$

$$(8m + 8n)(6m^2 - 8mn + 4n^2)$$

$$48m^3 - 64m^2n + 32mn^2$$

$$48m^2n - 64mn^2 + 32n^3$$

$$48m^3 - 16m^2n - 32mn^2 + 32n^3$$

(26) $(-3m^2 - 2mn - 8n^2)(8m^2 + 4mn + n^2)$

$$-24m^4 - 12m^3n - 3m^2n^2$$

$$-16m^3n - 8m^2n^2 - 2mn^3$$

$$-64m^2n^2 - 32mn^3 - 8n^4$$

$$-24m^4 - 28m^3n - 15m^2n^2 - 34mn^3 - 8n^4$$

Notes

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Special Products

$$(3x + 5)^2 \neq 9x^2 + 25$$

$$(x + y)^2 \neq x^2 + y^2$$

$$(xy)^2 \Rightarrow x^2 y^2$$

$$\begin{aligned} \underbrace{(x+y)}_{\text{first binomial}} \underbrace{(x+y)}_{\text{second binomial}} &= x^2 + xy + xy + y^2 \\ &= \boxed{x^2 + 2xy + y^2} \end{aligned}$$

$$\begin{aligned} (3x+5)^2 &= (3x+5)(3x+5) \\ &= 9x^2 + 30x + 25 \end{aligned}$$

① Square of a Sum

$$(a+b)^2 = (a+b)(a+b) \\ = a^2 + 2ab + b^2$$

$$(x+4)^2 = x^2 + 8x + 16$$

$(x)^2 \quad 2(x)(4) \quad (4)^2$

$$(2x+3)^2 = (2x)^2 + 2(2x)(3) + (3)^2 \\ = 4x^2 + 12x + 9$$

$$(8x+5y)^2 = 64x^2 + 80xy + 25y^2$$

② Square of a difference

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

$$(9p-1)^2 = 81p^2 - 18p + 1$$

Both of these products are called
Perfect Square Trinomials

(PST)

Ex: $x^2 - \underline{12x} + 36$ is a PST

Fill in the blank.

$$= (x - 6)^2$$

$$\text{Ex: } 9x^2 + \underline{30x} + 25 = (3x + 5)^2$$

Ex: $100x^2 - \underline{20xy} + y^2 = (10x - y)^2$

③ Product of a Sum and Difference

↳ Two binomials with the same numbers but opposite signs.

Ex: $(a+b)(a-b) = a^2 - \cancel{ab} + \cancel{b} - b^2$
 $= a^2 - b^2$

Ex:

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

Ex: $(10x - 3y)(10x + 3y) = 100x^2 - 9y^2$

called Difference
of Square (DOS)

$$\text{Ex: } (36x^2 - 121) = (6x + 11)(6x - 11)$$

$$\text{Ex: } (144x^6 - 49y^2) = (12x^3 - 7y)(12x^3 + 7y)$$

$$(12x^3)^2 = 12^2 x^6$$

