

問題番号 09M01_K4L3_1 レベル ☆☆☆	うんな進学塾 中3 第1章 多項式の計算 ⑭練習問題 Level-3-1 解答	うんな進学塾HP 
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1. 次の式を因数分解しなさい。

$$(1) \quad (x+y)^2 - (x-y)^2 - 4xy + 2(x^2 - y^2) = x^2 + 2xy + y^2 - (x^2 - 2xy + y^2) - 4xy + 2x^2 - 2y^2 \\ = 4xy - 4xy + 2x^2 - 2y^2 = 2x^2 - 2y^2 = 2(x-y)(x+y)$$

$$(2) \quad a^2b + ab^2 - ac^2 - a^2c + bc^2 + b^2c = a^2(b-c) + a(b^2 - c^2) + c(b^2 - c^2) \\ = (b-c)(a^2 + a(b+c) + c(b+c)) = (a+b)(a+c)(b-c)$$

$$(3) \quad x^2 + 3xy - 2x - 3y + 2 = (x^2 + 3xy) + (-2x - 3y) + 2 = x(x+3y) - 1(2x+3y) + 2 \\ = (x-1)(x+3y) - (x-1) = (x-1)(x+3y-1)$$

$$(4) \quad x^2y - y - x^2 + 1 = x^2(y-1) - (y-1) = (x^2-1)(y-1) = (x-1)(x+1)(y-1)$$

$$(5) \quad \frac{1}{4}(x-3y)^2 - \frac{1}{4}(x+3y)^2 - 2x(3y-x) - 2y(x-3y) \\ = \frac{1}{4}[(x-3y)^2 - (x+3y)^2] + 2x(x-3y) - 2y(x-3y) \\ = \frac{1}{4}[x^2 - 6xy + 9y^2 - x^2 - 6xy - 9y^2] + 2x^2 - 6xy - 2xy + 6y^2 \\ = \frac{-12xy}{4} + 2x^2 - 8xy + 6y^2 = 2x^2 - 5xy - 3y^2 = (x-3y)(2x+y)$$

$$(1) \quad 2(x-y)(x+y)$$

$$(2) \quad (a+b)(a+c)(b-c)$$

$$(3) \quad (x-1)(x+3y-1)$$

$$(4) \quad (x-1)(x+1)(y-1)$$

$$(5) \quad (x-3y)(2x+y)$$