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たすきかけによる因数分解

(例) 次の式を因数分解せよ。

$$(1) \quad 2x^2 + 7x + 3 = (x+3)(2x+1)$$

$$\begin{array}{r} 1 \times 1 & 2 \\ 2 \times 3 & \underline{3} \\ -\text{致せず} & \end{array} \quad \begin{array}{r} 1 \times 3 & 6 \\ 2 \times 1 & \underline{1} \\ -\text{致} & \end{array}$$

$$(2) \quad 3x^2 - 10x + 8 = (x-2)(3x-4)$$

$$\begin{array}{r} 1 \times -1 & -3 \\ 3 \times -8 & \underline{-8} \\ -\text{致せず} & \end{array} \quad \begin{array}{r} 1 \times -2 & -6 \\ 3 \times -4 & \underline{-4} \\ -\text{致} & \end{array}$$

$$(3) \quad 5x^2 - 7x - 6 = (x-2)(5x+3)$$

$$\begin{array}{r} 1 \times 2 & 10 \\ 5 \times -3 & \underline{-3} \\ -\text{致せず} & \end{array} \quad \begin{array}{r} 1 \times -2 & -10 \\ 5 \times 3 & \underline{3} \\ -\text{致} & \end{array}$$

$$(4) \quad 6x^2 - 5xy - 6y^2 = (2x-3y)(3x+2y)$$

$$\begin{array}{r} 2 \times -3y & -9y \\ 3 \times 2y & \underline{4y} \\ -\text{致} & \end{array}$$

$$(5) \quad abx^2 - (a^2 + b^2)x + ab = (ax-b)(bx-a)$$

$$\begin{array}{r} a \times -b & -b^2 \\ b \times -a & \underline{-a^2} \\ -\text{致} & \end{array}$$

(参考) なぜ、この方法(たすきかけ)で上手くいくのか?

$$4 acx^2 + (ad+bc)x + bd = (ax+b)(cx+d)$$

$$\begin{array}{r} \boxed{a} \times \boxed{b} & bc \\ c \times d & \underline{ad} \\ \text{一致するような } a, b, c, d \\ \text{の組を見つける} & \end{array}$$