因数分解（式のたすき掛け）　定期テスト対策

数スタ

次の式を因数分解しなさい。

(1)　$x^2+4xy+4y^2+5x+10y+6$

$= x^2+(4y+5)x+(4y^2+10y+6)$

$= x^2+(4y+5)x+(2y+3)(2y+2)$

$= \{x+(2y+3)\}\{x+(2y+2)\}$

$= (x+2y+3)(x+2y+2)$ //

$$\begin{array}{ccl} 1 & \times & (2y+3) \to 2y+3 \\ 1 & & (2y+2) \to 2y+2 \\ \hline & & 4y+5 \end{array}$$

(2)　$x^2+xy-2y^2+3x+3y+2$

$= x^2+(y+3)x-(2y^2-3y-2)$

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

$= \{x+(2y+1)\}\{x-(y-2)\}$

$= (x+2y+1)(x-y+2)$ //

$$\begin{array}{ccl} 1 & \times & (2y+1) \to 2y+1 \\ 1 & & -(y-2) \to -y+2 \\ \hline & & y+3 \end{array}$$

(3)　$2x^2-5xy+2y^2+5x-y-3$

$= 2x^2+(-5y+5)x+(2y^2-y-3)$

$= 2x^2+(-5y+5)x+(2y-3)(y+1)$

$= \{2x-(y+1)\}\{x-(2y-3)\}$

$= (2x-y-1)(x-2y+3)$ //

$$\begin{array}{ccl} 2 & \times & -(y+1) \to -y-1 \\ 1 & & -(2y-3) \to -4y+6 \\ \hline & & -5y+5 \end{array}$$

(4)　$2x^2-12xy+18y^2+x-3y-6$

$= 2x^2+(-12y+1)x+(18y^2-3y-6)$

$= 2x^2+(-12y+1)x+(6y+3)(3y-2)$

$= \{2x-(6y+3)\}\{x-(3y-2)\}$

$= (2x-6y-3)(x-3y+2)$ //

$$\begin{array}{ccl} 2 & \times & -(6y+3) \to -6y-3 \\ 1 & & -(3y-2) \to -6y+4 \\ \hline & & -12y+1 \end{array}$$

(5)　$6x^2+xy-y^2-x-3y-2$

$= 6x^2+(y-1)x-(y^2+3y+2)$

$= 6x^2+(y-1)x-(y+2)(y+1)$

$= \{3x-(y+2)\}\{2x+(y+1)\}$

$= (3x-y-2)(2x+y+1)$ //

$$\begin{array}{ccl} 3 & \times & -(y+2) \to -2y-4 \\ 2 & & (y+1) \to 3y+3 \\ \hline & & y-1 \end{array}$$