

平方完成をマスター



次の問題に答えて、知識をアウトプットしよう！！

out.

問題

次の式を平方完成しよう！

$$(1) \quad x^2 + 4x + 6$$

$$= (x+2)^2 - 4 + 6$$

$$= (x+2)^2 + 2$$

$$(2) \quad x^2 - 8x - 12$$

$$= (x-4)^2 - 16 - 12$$

$$= (x-4)^2 - 28$$

$$(3) \quad 2x^2 - 4x + 5$$

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

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

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

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

$$(4) \quad 3x^2 - 18x - 20$$

$$= 3(x^2 - 6x) - 20$$

$$= 3((x-3)^2 - 9) - 20$$

$$= 3(x-3)^2 - 27 - 20$$

$$= 3(x-3)^2 - 47$$

$$(5) \quad 2x^2 - x$$

$$= 2(x^2 - \frac{1}{2}x)$$

$$= 2((x-\frac{1}{4})^2 - \frac{1}{16})$$

$$= 2(x-\frac{1}{4})^2 - \frac{1}{8}$$

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

$$= 2(x^2 - \frac{3}{2}x) + 5$$

$$= 2((x-\frac{3}{4})^2 - \frac{9}{16}) + 5$$

$$= 2(x-\frac{3}{4})^2 - \frac{9}{8} + 5$$

$$= 2(x-\frac{3}{4})^2 + \frac{31}{8}$$

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

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

$$= -3((x-\frac{1}{2})^2 - \frac{1}{4}) + 3$$

$$= -3(x-\frac{1}{2})^2 + \frac{3}{4} + 3$$

$$= -3(x-\frac{1}{2})^2 + \frac{15}{4}$$

$$(8) \quad x^2 - 19x + 10$$

$$= (x-\frac{19}{2})^2 - \frac{19^2}{4} + 10$$

$$= (x-\frac{19}{2})^2 + \frac{-361+10}{4}$$

$$= (x-\frac{19}{2})^2 - \frac{351}{4}$$

$$(9) \quad 3x^2 + 4x + 8$$

$$= 3(x^2 + \frac{4}{3}x) + 8$$

$$= 3((x+\frac{2}{3})^2 - \frac{4}{9}) + 8$$

$$= 3(x+\frac{2}{3})^2 - \frac{4}{3} + 8 = 3(x+\frac{2}{3})^2 + \frac{20}{3}$$

$$(10) \quad 7x^2 - x - 2$$

$$= 7(x^2 - \frac{1}{7}x) - 2$$

$$= 7((x-\frac{1}{14})^2 - \frac{1}{14 \times 14}) - 2$$

$$= 7(x-\frac{1}{14})^2 - \frac{1}{14 \times 2} - 2 = 7(x-\frac{1}{14})^2 - \frac{57}{28}$$

$$(11) \quad -2x^2 + 5x$$

$$= -2(x^2 - \frac{5}{2}x)$$

$$= -2((x-\frac{5}{4})^2 - \frac{25}{16})$$

$$= -2(x-\frac{5}{4})^2 + \frac{25}{8}$$

$$(12) \quad -5x^2 - 3x - 20$$

$$= -5(x^2 + \frac{3}{5}x) - 20$$

$$= -5((x+\frac{3}{10})^2 - \frac{9}{100}) - 20$$

$$= -5(x+\frac{3}{10})^2 + \frac{9}{20} - \frac{400}{20} = -5(x+\frac{3}{10})^2 - \frac{391}{20}$$

$$(13) \quad \frac{1}{5}x^2 - 2x + 1$$

$$= \frac{1}{5}(x^2 - 10x) + 1$$

$$= \frac{1}{5}((x-5)^2 - 25) + 1$$

$$= \frac{1}{5}(x-5)^2 - 5 + 1$$

$$= \frac{1}{5}(x-5)^2 - 4$$

$$(15) \quad -3x^2 - \frac{2}{3}x + \frac{2}{9}$$

$$= -3(x^2 + \frac{2}{9}x) + \frac{2}{9}$$

$$= -3((x+\frac{1}{9})^2 - \frac{1}{81}) + \frac{2}{9}$$

$$= -3(x+\frac{1}{9})^2 + \frac{1}{27} + \frac{6}{27}$$

$$= -3(x+\frac{1}{9})^2 + \frac{7}{27}$$

$$(16) \quad ax^2 + bx + c$$

$$= a(x^2 + \frac{b}{a}x) + c$$

$$= a((x+\frac{b}{2a})^2 - \frac{b^2}{4a^2}) + c$$

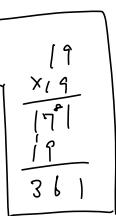
$$= a(x+\frac{b}{2a})^2 - \frac{b^2}{4a} + c$$

$$\left(= a(x+\frac{b}{2a})^2 - \frac{b^2 - 4ac}{4a} \right)$$

← ね、こで使、7.
1つずつ丁寧にやる。
ミスしにく!

$\frac{-9+40}{8} = \frac{31}{8}$

マイナスでくくろいは
気をつけよ。



文字式にも
慣れておこう！