

1 次の式を平方完成しなさい。

1. $\frac{1}{2}x^2 + x$

2. $\frac{2}{3}x^2 - 4x$

3. $-\frac{1}{2}x^2 + 4x$

4. $-\frac{3}{2}x^2 - 9x$

2 次の式を平方完成しなさい。

1. $\frac{1}{3}x^2 + x$

2. $\frac{2}{7}x^2 - 2x$

3. $-\frac{1}{3}x^2 + 3x$

4. $-\frac{2}{5}x^2 - x$

1 次の式を平方完成しなさい。

1. $\frac{1}{2}x^2 + x$

$$\begin{aligned} &= \frac{1}{2}(x^2 + 2x) \\ &= \frac{1}{2}\{(x+1)^2 - 1\} \\ &= \frac{1}{2}(x+1)^2 - \frac{1}{2} \end{aligned}$$

2. $\frac{2}{3}x^2 - 4x$

$$\begin{aligned} &= \frac{2}{3}(x^2 - 6x) \\ &= \frac{2}{3}\{(x-3)^2 - 9\} \\ &= \frac{2}{3}(x-3)^2 - 6 \end{aligned}$$

3. $-\frac{1}{2}x^2 + 4x$

$$\begin{aligned} &= -\frac{1}{2}(x^2 - 8x) \\ &= -\frac{1}{2}\{(x-4)^2 - 16\} \\ &= -\frac{1}{2}(x-4)^2 + 8 \end{aligned}$$

4. $-\frac{3}{2}x^2 - 9x$

$$\begin{aligned} &= -\frac{3}{2}(x^2 + 6x) \\ &= -\frac{3}{2}\{(x+3)^2 - 9\} \\ &= -\frac{3}{2}(x+3)^2 + \frac{27}{2} \end{aligned}$$

2 次の式を平方完成しなさい。

1. $\frac{1}{3}x^2 + x$

$$\begin{aligned} &= \frac{1}{3}(x^2 + 3x) \\ &= \frac{1}{3}\left\{\left(x + \frac{3}{2}\right)^2 - \frac{9}{4}\right\} \\ &= \frac{1}{3}\left(x + \frac{3}{2}\right)^2 - \frac{3}{4} \end{aligned}$$

2. $\frac{2}{7}x^2 - 2x$

$$\begin{aligned} &= \frac{2}{7}(x^2 - 7x) \\ &= \frac{2}{7}\left\{\left(x - \frac{7}{2}\right)^2 - \frac{49}{4}\right\} \\ &= \frac{2}{7}\left(x - \frac{7}{2}\right)^2 - \frac{7}{2} \end{aligned}$$

3. $-\frac{1}{3}x^2 + 3x$

$$\begin{aligned} &= -\frac{1}{3}(x^2 - 9x) \\ &= -\frac{1}{3}\left\{\left(x - \frac{9}{2}\right)^2 - \frac{81}{4}\right\} \\ &= -\frac{1}{3}\left(x - \frac{9}{2}\right)^2 + \frac{27}{4} \end{aligned}$$

4. $-\frac{2}{5}x^2 - x$

$$\begin{aligned} &= -\frac{2}{5}\left(x^2 + \frac{5}{2}x\right) \\ &= -\frac{2}{5}\left\{\left(x + \frac{5}{4}\right)^2 - \frac{25}{16}\right\} \\ &= -\frac{2}{5}\left(x + \frac{5}{4}\right)^2 + \frac{5}{8} \end{aligned}$$