



数学I

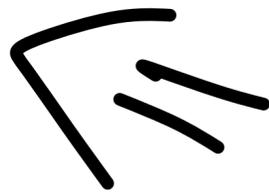
第1章 数と式

根号の扱い方



<復習>

$$|a| = \begin{cases} a \geq 0 \text{ かつ } a & a \\ a < 0 \text{ かつ } -a & -a \end{cases}$$



つまり、

$$x \geq 0 \text{ かつ } \sqrt{x^2} = x$$

$$x < 0 \text{ かつ } \sqrt{x^2} = -x$$

∴ $\sqrt{x^2}$ は $\pm x$ ではない!!

$$x = 6 \text{ かつ } \sqrt{6^2} = \sqrt{36} = 6$$

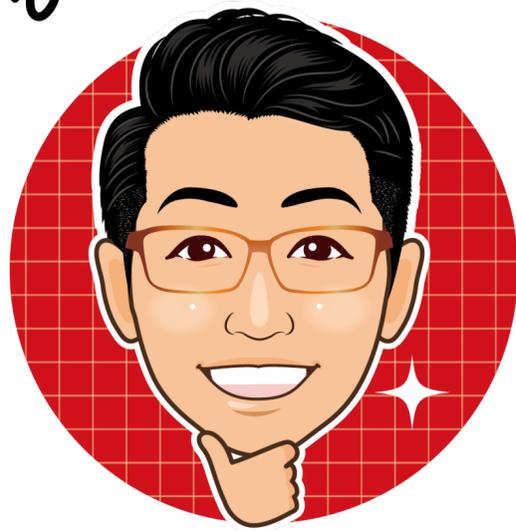
$$x = -6 \text{ かつ } \sqrt{(-6)^2} = \sqrt{36} = 6$$

$$= -6 \text{ X}$$



つまり

$$\sqrt{x^2} = |x|$$



(ex)

$$(1) \sqrt{9x^2} = \sqrt{(3x)^2} = |3x|$$

$$(2) \sqrt{x^2 - 4x + 4} = \sqrt{(x-2)^2} = |x-2|$$

$$(3) \sqrt{x^2 + 2x + 1} = \sqrt{(x+1)^2} = |x+1|$$



二重根号

(ex) $\sqrt{7+2\sqrt{12}}$ の根号とほろぼす。

$$\sqrt{\underbrace{0}_{t=12} + 2\sqrt{\underbrace{\Delta}_{5+2}}} , \sqrt{\underbrace{0}_{t=12} - 2\sqrt{\underbrace{\Delta}_{5+2}}}$$

$$\begin{aligned} & \sqrt{7+2\sqrt{12}} \\ &= \sqrt{4} + \sqrt{3} \\ &= \underline{\underline{2 + \sqrt{3}}} \end{aligned}$$

$$\begin{aligned} & \sqrt{8-2\sqrt{12}} \\ &= \sqrt{6} - \sqrt{2} \\ & \underline{\underline{\text{大} - \text{小}}} \end{aligned}$$

<まとめ>

$$\begin{aligned} \textcircled{1} \quad \sqrt{(a+b)+2\sqrt{ab}} &= \sqrt{a} + \sqrt{b} \\ &= \sqrt{b} + \sqrt{a} \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad \sqrt{(a+b)-2\sqrt{ab}} \quad (a > b) \\ &= \sqrt{a} - \sqrt{b} \end{aligned}$$

