

## Breaking down $\sqrt{-\#}$

$$i = \sqrt{-1} \quad i^2 = -1$$

$$\begin{aligned} \text{Ex) } \sqrt{-81} \\ \sqrt{-1} \cdot \sqrt{81} \\ i \cdot 9 = 9i \end{aligned}$$

Step 1: Break down

$$\sqrt{-1} \cdot \sqrt{\#}$$

Step 2: Change  $\sqrt{-1}$  to  $i$   
break <sup>down</sup>  $\sqrt{\#}$

$$\begin{aligned} \text{Ex) } \sqrt{-75} \\ \sqrt{-1} \cdot \sqrt{75} \\ i \cdot \sqrt{25} \cdot \sqrt{3} \\ i \cdot 5\sqrt{3} = 5i\sqrt{3} \end{aligned}$$

$$\text{Ex) } 1x^2 - 2x + 5 = 0$$

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

$$2$$

$$= \frac{2 \pm \sqrt{4 - 20}}{2}$$

$$= \frac{2 \pm \sqrt{-16}}{2}$$

$$= \frac{2 \pm 4i}{2}$$

$$\boxed{= 1 \pm 2i}$$

$$\begin{aligned} \sqrt{-16} \\ \sqrt{-1} \cdot \sqrt{16} \\ 4i \end{aligned}$$

p. 353

2-5, 18-21

p. 361

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