Tidy the Roots

QF05-V1 · storyboard · QF05 Tidy the roots. Read each picture with its sentences.

Picture 1

Tidy $\sqrt{72}$.

$$\sqrt{72} = \sqrt{36}\,\sqrt{2}$$ 36 is the largest square factor

$$= \boxed{6\sqrt{2}}$$

1. Tidy root 72.
2. 72 is 36 times 2, and 36 is a square: the largest square that divides 72.
3. So root 72 is 6 root 2.

Picture 2

Tidy $x = \dfrac{-4 \pm \sqrt{-20}}{2}$.

$$\sqrt{-20} = i\sqrt{20} = 2i\sqrt{5}$$ the i first

$$x = \frac{-4 \pm 2i\sqrt{5}}{2}$$

$$\boxed{x = -2 \pm i\sqrt{5}}$$ divide every term by 2

4. Now tidy x equals negative 4, plus or minus root negative 20, all over 2.
5. The i comes out first: root negative 20 is i root 20, which is 2 i root 5.
6. So x is negative 4, plus or minus 2 i root 5, all over 2.
7. Both terms on top can be divided by 2, so divide every term by 2: x equals negative 2, plus or minus i root 5.

Picture 3

Trap $\dfrac{-4 \pm 2i\sqrt{5}}{2}$

$\times \quad -2 \pm 2i\sqrt{5}$

$\checkmark \quad -2 \pm i\sqrt{5}$

8. Watch for the trap.
9. Don't divide only the first term: divide every term, the root part too.

Picture 4

Trap $\sqrt{9+16}$

$\times \; 3+4=7$

$\checkmark \quad \sqrt{25}=5$

10. And a root doesn't split over a sum: the root of 9 plus 16 is not 3 plus 4.
11. Add first: root 25 is 5.