

Warmup

Simplify the square root.

$$\textcircled{1} \sqrt{60}$$

$\begin{array}{c} \nearrow 6 \searrow 10 \\ 3 \nearrow 2 \searrow 2 \nearrow 5 \\ \textcircled{2} \end{array}$

$$2\sqrt{15}$$


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$$\textcircled{2} \sqrt{81}$$

$\begin{array}{c} \textcircled{9} \textcircled{9} \\ \textcircled{3 \cdot 3} \textcircled{3 \cdot 3} \\ 9 \leftarrow 3 \cdot 3 \end{array}$

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$$\textcircled{3} \sqrt{-16} \rightarrow \sqrt{-1} \cdot \sqrt{16}$$

$$i\sqrt{16}$$

$\begin{array}{c} \textcircled{4} \textcircled{4} \\ \boxed{4i} \end{array}$

$$i\sqrt{2 \cdot 2 \cdot 2 \cdot 2}$$

$2 \cdot 2i$

$$\textcircled{4} \sqrt{-240} \rightarrow \sqrt{-1} \cdot \sqrt{240}$$

$$i\sqrt{240}$$

$\begin{array}{c} \nearrow 24 \searrow 10 \\ 6 \nearrow 4 \searrow 2 \nearrow 5 \\ 2 \nearrow 3 \searrow 2 \nearrow 2 \end{array}$

$$i\sqrt{2 \cdot 3 \cdot 2 \cdot 2 \cdot 2 \cdot 5}$$

$$2 \cdot 2i\sqrt{3 \cdot 5}$$

$$4i\sqrt{15}$$

## Notes #3 Adding + Subtracting Complex #s

**imaginary #s**

$3i$  or  $-i$  or  $i\sqrt{5}$  monomial-one piece

**Complex #** has 2 parts  $\rightarrow$  binomial

real #  $\overset{+}{\text{or}} \underset{-}{}$  imaginary #

$5 + 2i$  cannot combine  
not like terms

Let's combine like terms:

$$\textcircled{1} \quad \boxed{10} + \underline{2x} \boxed{-3} - \underline{5x} \boxed{+6}$$

$$13 - 3x$$

$$\textcircled{2} \quad \boxed{12} + \underline{5i} \boxed{-6} + \underline{3i} \boxed{+4}$$

$$\text{real} \rightarrow 10 + 8i \leftarrow \text{imaginary}$$

Adding complex #s

$$(\text{Complex \#}) + (\text{Complex \#})$$

really  
don't need  
the ( )

$$\textcircled{1} \quad (3+5i) + (4-6i) \quad \text{just add}$$

$$\boxed{3} + \underline{5i} + \boxed{4} - \underline{6i} \quad \text{combine like terms}$$

$$7 - 1i$$

$$\textcircled{2} \quad (\underline{5} - 12i) + (\underline{8} - i)$$

$$\boxed{13 - 13i}$$

Subtracting complex #'s

$$(\text{complex \#}) - (\text{complex \#})$$

①  $(8-7i) - (6-2i)$  \* must distribute the neg.  
 can't just drop ( )  
 changes signs

$\underline{8} - 7i - \underline{6} + \underline{2i}$  now combine  
 $2 - 5i$

try this:

$(15-6i) + (+7-2i)$  change  
 $\underline{15} - 6i + \underline{7} - 2i$   
 $22 - 8i$