



Multiply:  $(\sqrt{-2})(\sqrt{-6})$   
 $(i\sqrt{2})(i\sqrt{6})$

① Simplify all radicals first!

$$i^2 \sqrt{12}$$

$$- \sqrt{12}$$

$$\textcircled{4} 3$$

$-2 \sqrt{3}$

② Multiply

③ Simplify

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$$(\sqrt{-27})(\sqrt{-2})$$

$$(\underline{3}i\underline{\sqrt{3}})(\underline{i}\underline{\sqrt{2}})$$

$$3i^2 \sqrt{6}$$

$$3 \cdot -1$$

$-3\sqrt{6}$

Multiply:

$$(4 - 3i)^2$$

$$(4 - 3i)(4 - 3i)$$

$$16 - 12i - 12i + 9i^2$$

$$16 - 24i + 9(-1)$$

$$\underline{\underline{16}} - 24i - \underline{\underline{9}}$$

$$\boxed{7 - 24i}$$



$$\begin{aligned} &(x+2)^2 \\ &(x+2)(x+2) \quad 3^2 \\ &\quad 3 \cdot 3 \\ &(2x)^2 \\ &\quad 2x \cdot 2x \end{aligned}$$

**Multiply:**  $(3 + 4i)(3 - 4i)$

$$9 - 12i + 12i - 16i^2$$
$$9 - 16(-1)$$
$$9 + 16$$
$$\textcircled{25}$$

This is known as a conjugate.  
 $a + bi$  and  $a - bi$  are conjugates





Divide:

$$\frac{(2-i)(3-4i)}{(3+4i)(3-4i)}$$

2 terms  
& i in the  
bottom  
means we  
need to

Rationalize  
using the conjugate

$$\frac{6-8i-3i+4i^2}{9-12i+12i-16i^2}$$

$9+16$

$$\frac{6-11i-4}{9+16} = \boxed{\frac{2-11i}{25}}$$

$$\frac{(3-i) \cdot i}{(10i) \cdot i}$$

$$\frac{3i-i^2}{10i^2} = \frac{3i-(-1)}{10 \cdot -1} = \frac{3i+1}{-10}$$

Divide:



$$\frac{(2-6i)(5-3i)}{(5+3i)(5-3i)}$$

$$\frac{10-6i-30i+18i^2}{25-\cancel{15i}+\cancel{15i}-9i^2}$$

$$\frac{10-36i-18}{25+9} = \frac{-8-36i}{34} = \frac{-4-18i}{17}$$