Exercise 34

For the following exercises, perform the indicated operation and express the result as a simplified complex number.

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

Solution

Start by making the denominator real. Then use the distributive property.

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

$$\frac{2-3i}{4+3i} \times \frac{4-3i}{4-3i}$$

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

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

$$\frac{8-18i+9(-1)}{16-9(-1)}$$

$$\frac{8-18i-9}{16+9}$$

$$\frac{-1-18i}{25}$$

$$\frac{1}{25}(-1-18i)$$

$$-\frac{1}{25}-\frac{18}{25}i$$