

7E $R\cos(x + \alpha)$ & $R\sin(x + \alpha)$

1. Show that:

$$3\sin x + 4\cos x$$

Can be expressed in the form:

$$R\sin(x + \alpha)$$

$$R > 0$$

$$0^\circ < \alpha < 90^\circ$$

2. Show that you can express:

$$\sin x - \sqrt{3}\cos x$$

In the form:

$$R\sin(x - \alpha)$$

$$R > 0$$

$$0 < \alpha < \frac{\pi}{2}$$

Quick Shortcuts and patterns:

Key point: This skill helps us reduce two trigonometric functions with the same angle that are being summed together to one single trigonometric function.

Where could this skill be useful?

3.

a) Express:

$$2\cos\theta + 5\sin\theta$$

in the form:

$$R\cos(x - \alpha)$$

$$R > 0$$

$$0^\circ < \alpha < 90^\circ$$

b) Hence, solve $2\cos\theta + 5\sin\theta = 3$, $0^\circ < \theta < 360^\circ$