1 Express each of the following in the form $r\sin(x+\alpha)$.

(a) $\sin x + \cos x$	**(c)** $5\sin x + 12\cos x,\ 0° < \alpha < 90°$

2 Express each of the following in the form $r\sin(x-\alpha)$.

(a) $\sin x - \sqrt{3}\cos x$	**(c)** $2\sin x - \cos x,\ 0° < \alpha < 90°$

3 Express each of the following in the form $r\cos(x-\alpha)$.

(a) $\cos x + \sin x$	**(d)** $3\cos x + 2\sin x,\ 0° < \alpha < 90°$

5 Which expression is equivalent to $8\sin x - 15\cos x$?

A $17\cos(x - 61°56')$ **B** $17\sin(x - 61°56')$
C $17\cos(x + 61°56')$ **D** $17\sin(x + 61°56')$

6 Find **(i)** the maximum and **(ii)** the minimum value of the following expressions. Also find the smallest positive values of x for which the maximum and minimum occur.

(a) $\sin x - \sqrt{3}\cos x$	**(c)** $2\sqrt{3}\cos x - 2\sin x$

7 Solve:

(a) $\cos x + \sin x = 1, 0 \le x \le 2\pi$	**(h)** $\cos x - \sin x = -1, -\frac{\pi}{2} \le x \le \frac{3\pi}{2}$

8 Sketch the graph of $f(x) = \sqrt{3}\cos x - \sin x$, $0 \leq x \leq 2\pi$. Use your sketch to find the values of x for which:

(a) $f(x) = 1$ **(b)** $f(x) > 1$