## Wave Function

1. Express the following in the form $k \cos (x-a)^{0}$ where $k>0$ and $0 \leq a \leq 360^{\circ}$.
a) $\cos x^{0}+\sin x^{0}$
b) $4 \cos x^{0}-3 \sin x^{0}$
2. Express the following in the form $r \cos (\theta-a)$ where $r>0$ and $0 \leq a \leq 2 л$.
a) $3 \sin \theta-3 \cos \theta$
b) $2 \cos \theta-\sqrt{12} \sin \theta$
(8)
3. Express the following in the form $k \sin (x-a)^{0}$ where $k>0$ and $0 \leq a \leq 360^{\circ}$.
a) $2.5 \sin x^{0}+5 \cos x^{0}$
b) $\sqrt{6} \cos x^{0}-\sqrt{2} \sin x^{0}$
4. Express $4 \cos 2 x^{0}-3 \sin 2 x^{0}$ in the form $k \sin (2 x-a)^{0}$ where $k>0$ and $0 \leq a \leq 360^{\circ}$.
5. $F(x)=2 \cos x+3 \sin x$.
a) Express $f(x)$ in the form $k \cos (x-a)^{0}$ where $k>0$ and $0 \leq a \leq 360^{\circ}$.
b) Hence solve algebraically $f(x)=0.5$ for $0 \leq a<360^{\circ}$.
6. Solve the equation $3 \cos x+\sin x=2$ for $0 \leq x \leq 2 \pi$.
7. a) What is the minimum value of $g(x)=2+3 \cos x-4 \sin x$ ?
b) For what value of $x$, between 0 and 360 , does the minimum occur?

Revision
8. Show that $\cos \left(x-\frac{\pi}{6}\right)-\cos \left(x+\frac{\pi}{6}\right)=\sin x$

