3.77
1.4

$3-\sin 4x+3\sin 2x-3\cos 2x=0$

$3-2\sin 2x\cos 2x+3\sin 2x-3\cos 2x=0$

$2+\underbrace{1-2\sin 2x\cos 2x}_{(\sin 2x-\cos 2x)^2}+3(\sin 2x-\cos 2x)=0$

$2+(\sin 2x-\cos 2x)^2+3(\sin 2x-\cos 2x)=0$

$t^2+3t+2=0$

$t=-2$

$\sin 2x-\cos 2x=-2$

$\frac{\sqrt{2}}{\sqrt{2}}\left(\frac{\sqrt{2}}{2}\sin 2x-\frac{\sqrt{2}}{2}\cos 2x\right)=-2$

$\cos 45\sin 2x-\sin 45\cos 2x=-\sqrt{2}$

$\sin\left(2x-\frac{\pi}{4}\right)=-\sqrt{2}$

$\emptyset$

$\sin 2x-\cos 2x=-1$

$\sqrt{2}\sin\left(2x-\frac{\pi}{4}\right)=-1$

$\sin\left(2x-\frac{\pi}{4}\right)=\frac{-1}{\sqrt{2}}=-\frac{\sqrt{2}}{2}=\sin\left(-\frac{\pi}{4}\right)$

$2x-\frac{\pi}{4}=-\frac{\pi}{4}+2\pi k$ | $2x-\frac{\pi}{4}=\frac{5\pi}{4}+2\pi k$

$\boxed{x=\pi k}$ | $\boxed{x=\frac{3\pi}{4}+\pi k}$

3.77
p.4

$\cos^2 x+\cos^2(\alpha+x)-2\cos x\cos\alpha\cdot\cos(x+\alpha)=$

$\cos^2 x+\cos(\alpha+x)\left[\cos(\alpha+x)-2\cos x\cos\alpha\right]=$

$\cos^2 x+\cos(\alpha+x)\left[\cos(\alpha+x)-\cos(\alpha+x)-\cos(x-\alpha)\right]=$

$\cos^2 x+\cos(\alpha+x)\cos(x-\alpha)=$

$\cos^2 x+\frac{1}{2}\cos(2x)+\frac{1}{2}\cos 2\alpha=$

$\cos^2 x+\frac{1}{2}(2\cos^2 x-1)+\frac{1}{2}\cos 2\alpha=\frac{1}{2}(\cos 2\alpha-1)$