$\tan(\pi-\alpha)=\frac{\tan\pi-\tan\alpha}{1+\tan\pi\tan\alpha}=-\tan\alpha$

$\tan(\pi+\alpha)=\frac{\tan\pi+\tan\alpha}{1-\tan\pi\tan\alpha}=\tan\alpha$

$\tan(2\pi-\alpha)=\frac{\tan 2\pi-\tan\alpha}{1+\tan 2\pi\tan\alpha}=-\tan\alpha$

$\tan(2\pi-\alpha)=\tan\alpha$

$\frac{-\tan\alpha+3\tan\alpha}{-\tan\alpha-\tan\alpha}=\frac{2\tan\alpha}{-2\tan\alpha}=-1$ ۶

$\tan 75^\circ=\cot 15^\circ$

$\tan\frac{\pi}{12}=\tan 15^\circ=a$

$\tan 165=-\tan 15^\circ$

$\tan 255^\circ=\tan(180+75)^\circ=\tan 75^\circ=\cot 15^\circ$

$\tan 105^\circ=-\tan 75^\circ=-\cot 15^\circ$

$\frac{\frac{3}{a}+\frac{1}{a}}{-3a+\frac{1}{a}}=\frac{\frac{1}{a}}{\frac{-3a^2-1}{a}}=-\frac{1}{3a^2+1}$ ۷

$\frac{\sin^2x+\cos^2x+2\sin x\cos x+\sin^2x+\cos^2x-2\sin x\cos x}{\sin^2x-\cos^2x}=\frac{2}{\sin^2x-\cos^2x}=3$

$\sin^2x-\cos^2x=\frac{2}{3}$

$\sin^2x+\cos^2x=1$

$2\sin^2x=\frac{5}{3}$ ۸

$\sin^2x=\frac{5}{6}$

$\cos^2x=\frac{1}{6}$

$\tan^2x=\frac{\sin^2x}{\cos^2x}=\frac{\frac{5}{6}}{\frac{1}{6}}=5$

$4\cos^2-1$

$\frac{-\sin^2x+2\cos^2x-1}{1-\sin^2x-2\cos^2x}=\frac{3\cos^2x-2}{-\cos^2x}=\frac{4}{1}$

$\cos^2x$

$-4\cos^2x=3\cos^2x-2$

$7\cos^2x=2 \quad \cos^2x=\frac{2}{7}$ ۹

$\sin^2x=\frac{5}{7}$

$\tan^2x=\frac{\frac{5}{7}}{\frac{2}{7}}=\frac{5}{2}$

الف) $\cos^2\alpha=\frac{1+\cos 2\alpha}{2}=\cos^2 22/5=\frac{1+\cos 45}{2}=\cos^2 22/5=\frac{\frac{2+\sqrt{2}}{2}}{2}$

$\cos^2 22/5=\frac{2+\sqrt{2}}{4} \quad \cos 22/5=\frac{\sqrt{2+\sqrt{2}}}{2}$ ۱۰

ب) $\sin^2\alpha=\frac{1+\cos 2\alpha}{2} \quad \sin^2 67/5=\frac{1+\cos 135^\circ}{2}=\frac{1+\frac{\sqrt{2}}{2}}{2}=\frac{\frac{2+\sqrt{2}}{2}}{2}$

$\sin^2 67/5=\frac{2+\sqrt{2}}{4}$

$\sin 67/5=\frac{\sqrt{2+\sqrt{2}}}{2}$