Identities Solutions

a)	$\sin\left(\frac{3\pi}{2}-x\right)=-\cos x$ $LS=\sin\left(\frac{3\pi}{2}-x\right)$ $=\sin\frac{3\pi}{2}\cos x-\cos\frac{3\pi}{2}\sin x$ $=-1\times\cos x-0\times\sin x$ $=-\cos x$ $=RS$	b)	$\cos(\pi-x)=-\cos x$ $LS=\cos(\pi-x)$ $=\cos\pi\ \cos x+\sin\pi\sin x$ $=-1\times\cos x+0\times\sin x$ $=-\cos x$ $=RS$
c)	$\cos x=\sin x\cot x$ $LS=\cos x$ $RS=\sin x\frac{\cos x}{\sin x}$ $=\cos x$ $=LS$	d)	$1+\sin x=\sin x(1+\csc x)$ $1+\sin x=\sin x(1+\frac{1}{\sin x})$ $=\sin x+1$ $LS=RS$
e)	$\frac{\sin 2x}{2\sin x}=\frac{1-\sin^2 x}{\cos x}$ $\frac{2\sin x\cos x}{2\sin x}=\frac{\cos^2 x}{\cos x}$ $\cos x=\cos x$ $LS=RS$	f)	$\frac{1}{\cos x}+\tan x=\frac{\cos x}{1-\sin x}$ $\frac{1}{\cos x}+\frac{\sin x}{\cos x}=\frac{\cos x}{1-\sin x}$ $\frac{1+\sin x}{\cos x}=\frac{\cos x}{1-\sin x}$ $1-\sin^2 x=\cos^2 x$ $LS=RS$
g)	$1-2\tan x+\tan^2 x=\frac{1-\sin 2x}{\cos^2 x}$ $\cos^2 x(1-2\tan x+\tan^2 x)=1-2\sin x\cos x$ $\cos^2 x(1-2\frac{\sin x}{\cos x}+\frac{\sin^2 x}{\cos^2 x})=1-2\sin x\cos x$ $\cos^2 x-2\sin x\cos x+\sin^2 x=1-2\sin x\cos x$ $1-2\sin x\cos x=1-2\sin x\cos x$ $LS=RS$	h)	$\cos 2x=\cos^4 x-\sin^4 x$ $=(\cos^2 x-\sin^2 x)(\cos^2 x+\sin^2 x)$ $=(\cos^2 x-\sin^2 x)(1)$ $=\cos^2 x-\sin^2 x$ $LS=RS$
i)	$2\sin x\sin y=\cos(x-y)-\cos(x+y)$ $2\sin x\sin y=(\cos x\cos y+\sin x\sin y)-(\cos x\cos y-\sin x\sin y)$ $=\cos x\cos y+\sin x\sin y-\cos x\cos y+\sin x\sin y$ $=2\sin x\sin y$		