Verify the following trigonometric identities

1. $\dfrac{1+\csc x}{\sec x}-\cot x=\cos x$
2. $\dfrac{\cos x}{1-\sin x}=\sec x+\tan x$
3. $\dfrac{\sin^3 x+\cos^3 x}{\sin x+\cos x}=1-\sin x\cos x$
4. $\dfrac{\cot x}{\csc x-1}=\dfrac{\csc x+1}{\cot x}$
5. $1-\dfrac{\sin^2 x}{1-\cos x}=-\cos x$
6. $(\sec x-\tan x)(\csc x+1)=\cot x$
7. $\dfrac{\tan x+\cot y}{\tan x\cot y}=\tan y+\cot x$