25) $\frac{1}{\tan\theta} + \frac{}{1-\sec\theta} = \frac{}{\tan\theta(1-\sec\theta)} = \frac{}{\tan\theta(1-\sec\theta)} = \frac{}{\tan\theta(1-\sec\theta)} = \frac{}{\tan\theta(1-\sec\theta)}$

$= -\frac{2\sec\theta}{\tan\theta} = -\frac{2}{\cos\theta} \cdot \frac{\cos\theta}{\sin\theta} = -\frac{2}{\sin\theta} = -2\csc\theta$

26) $\frac{\cos u}{\cos u - \sin u} = \frac{\cos u}{\cos u - \sin u} \cdot \frac{\frac{1}{\cos u}}{\frac{1}{\cos u}} = \frac{1}{1 - \frac{\sin u}{\cos u}} = \frac{1}{1 - \tan u}$

27) $(\sec v + \tan v)^2 = \sec^2 v + 2\sec v \tan v + \tan^2 v = \frac{1}{\cos^2 v} + \frac{2\sin v}{\cos^2 v} + \frac{\sin^2 v}{\cos^2 v} = \frac{1 + 2\sin v + \sin^2 v}{\cos^2 v} = \frac{(1+\sin v)^2}{1 - \sin^2 v} =$

$\frac{(1+\sin v)^2}{(1-\sin v)(1+\sin v)} = \frac{1+\sin v}{1-\sin v}$

28) $\frac{\cos u}{1+\tan u} - \frac{\sin u}{1+\cot u} = \frac{\cos u}{1 + \frac{\sin u}{\cos u}} - \frac{\sin u}{1 + \frac{\cos u}{\sin u}} = \frac{\cos^2 u}{\cos u + \sin u} - \frac{\sin^2 u}{\sin u + \cos u} = \frac{\cos^2 u - \sin^2 u}{\cos u + \sin u} =$

$\frac{(\cos u - \sin u)(\cos u + \sin u)}{\cos u + \sin u} = \cos u - \sin u$

29) $\frac{\cot u + \csc u - 1}{\cot u - \csc u + 1} = \frac{\cot u + (\csc u - 1)}{\cot u - (\csc u - 1)} = \frac{\cot u + (\csc u - 1)}{\cot u - (\csc u - 1)} \cdot \frac{\cot u + (\csc u - 1)}{\cot u + (\csc u - 1)} =$

$\frac{\cot^2 u + 2\cot u(\csc u - 1) + (\csc^2 u - 2\csc u + 1)}{\cot^2 u - (\csc^2 u - 2\csc u + 1)} = \frac{\csc^2 u - 1 + 2\cot u(\csc u - 1) + (\csc^2 u - 2\csc u + 1)}{\csc^2 u - 1 - (\csc^2 u - 2\csc u + 1)} =$

$\frac{2\csc^2 u - 2\csc u + 2\cot u(\csc u - 1)}{-2 + 2\csc u} = \frac{2\csc u(\csc u - 1) + 2\cot u(\csc u - 1)}{2(\csc u - 1)} = \frac{2(\csc u + \cot u)(\csc u - 1)}{2(\csc u - 1)} = \csc u +$

$\cot u$

30) $\frac{\tan u + \cot u}{\tan u - \cot u} = \frac{\frac{\sin u}{\cos u} + \frac{\cos u}{\sin u}}{\frac{\sin u}{\cos u} - \frac{\cos u}{\sin u}} = \frac{\frac{\sin^2 u + \cos^2 u}{\cos u \sin u}}{\frac{\sin^2 u - \cos^2 u}{\cos u \sin u}} = \frac{\sin^2 u + \cos^2 u}{\sin^2 u - \cos^2 u} = \frac{1}{\sin^2 u - \cos^2 u}$