$$
\begin{aligned}
& \text { 27. } \begin{aligned}
\sin x & +\cos x=\frac{\cos x}{1-\tan x}+\frac{\sin x}{1-\cot x} \\
& \left.=\left(\frac{\cos x}{\cos x}\right) \frac{\cos x}{1-\frac{\sin x}{\cos x}}+\frac{\sin x}{1-\frac{\cos x}{\sin x}}+\frac{\sin x}{\sin x}\right) \\
& =\left(\frac{-1}{-1}\right) \frac{\cos ^{2} x}{\cos x-\sin x}+\frac{\sin ^{2} x}{\sin x-\cos x} \\
& =\frac{-\cos ^{2} x+\sin ^{2} x}{\sin x-\cos x} \\
& =\frac{\sin 2 x-\cos ^{2} x}{\sin x-\cos x} \\
& =\frac{(\sin x+\cos x)(\sin x-\cos x)}{\sin x-\cos x}
\end{aligned} \\
& \begin{aligned}
\sin x+\cos x & =\sin x+\cos x
\end{aligned}
\end{aligned}
$$

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$$
\begin{aligned}
& \sin ^{2} \theta+\cos ^{2} \theta=1
\end{aligned}
$$

$$
\begin{aligned}
& \cos ^{2} \theta=1-\sin ^{2} \theta \\
& 1-\sin ^{2} x+2 \sin x-2=0 \\
& -1\left(-\sin ^{2} x+2 \sin x-1=0\right) \\
& \sin ^{2} x-2 \sin x+1=0 \\
& (\sin x-1)^{2}=0 \\
& \frac{\sin x-1=0}{\sin x=1} \\
& x^{3}-y^{3} \quad \mid a^{3}-b^{3}=(a-b)\left(a^{2}+a b+b^{2}\right) \\
& \text { 35. If } \frac{\tan ^{3} \theta-1}{\tan \theta-1}-\sec ^{2} \theta-1=0 \text {, } \\
& \begin{array}{l}
a=\tan \theta \\
b=1
\end{array} \frac{(\tan \theta-1)\left(\tan ^{2} \theta+\tan \theta+1\right)}{\tan \theta}-\sec ^{2} \theta-1=0 \\
& \tan ^{2} \theta+\tan \theta+1-\sec ^{2} \theta-1=0 \\
& \tan ^{2} \theta+\tan \theta+1-\left(\tan ^{2} \theta+1\right)-1=0 \\
& \tan ^{2} \theta+\tan \theta+1-\tan ^{2} \theta-1-1=0 \\
& \tan \theta-1=0 \\
& \tan \theta=1 \quad \cot \theta=1 \\
& \text { 25,31 Section 7. }
\end{aligned}
$$

$$
\begin{aligned}
& \cos 735^{\circ}=\cos 375^{\circ}=\cos 15^{\circ} \\
& 735 \\
& \frac{-360}{375} \\
& \frac{-360}{15} \\
& \cos 375=\cos (330+45)=\cos 330^{\circ} \cos 45^{\circ}-\sin 330^{\circ} \sin 45^{\circ} \\
&=\left(\frac{\sqrt{3}}{2}\right)\left(\frac{\sqrt{2}}{2}\right)-\left(-\frac{1}{2}\right)\left(\frac{\sqrt{2}}{2}\right) \\
&=\frac{\sqrt{6}}{4}+\frac{\sqrt{2}}{4} \\
&=\frac{\sqrt{6}+\sqrt{2}}{4}
\end{aligned}
$$

