41) $\sin^4 x + \cos^4 x = \sin^2 x (\csc^2 x - 2\cos^2 x)$

$\rightarrow$ $\sin^2 x (\csc^2 x - 2\cos^2 x) = \sin^2 x \left(\frac{1}{\sin^2 x} - 2\cos^2 x\right)$

$= \boxed{1 - 2\sin^2 x \cos^2 x}$

$\sin^4 x + \cos^4 x = (\sin^2 x + \cos^2 x)^2 - 2\sin^2 x \cos^2 x$

$= \boxed{1 - 2\sin^2 x \cos^2 x}$

$\therefore$ $\sin^4 x + \cos^4 x = \sin^2 x (\csc^2 x - 2\cos^2 x)$ //

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42) $\sin^3 x + \cos^3 x = (1 - \sin x \cos x)(\sin x + \cos x)$

$\rightarrow (1 - \sin x \cos x)(\sin x + \cos x) =$

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

$= \sin x (1 - \cos^2 x) + \cos x (1 - \sin^2 x)$

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

$= \sin^3 x + \cos^3 x$ //