For an $m \times m$ real matrix A, e^A is defined as $\sum_{n=0}^{\infty} \frac{1}{n!} A^n$. (The sum is convergent for all matrices.) Prove or disprove, that for all real polynomials p and $m \times m$ real matrices A and B, $p\left(e^{AB}\right)$ is nilpotent if and only if $p\left(e^{BA}\right)$ is nilpotent. (A matrix A is nilpotent if $A^k = 0$ for some positive integer k.)