(1) Recall that a series $\Sigma_{n=0}^{\infty} a_n(t)$ is said to converge uniformly on $[a, b]$ if for any $\epsilon > 0$ there exists $N > 0$ such that $|\Sigma_{n=N}^{\infty} a_n(t)| \leq \epsilon$ for any $t \in [a, b]$.

(a) Show that the power series $\Sigma_{n=0}^{\infty} \frac{x^n}{n!}$ converges uniformly on $[-R, R]$ for any finite $R > 0$.

(b) Show that for any $n \times n$ matrices A, B the series $\Sigma_{n=0}^{\infty} \frac{(tA+B)^n}{n!}$ converges uniformly on $[-R, R]$ for any positive R.
Hint: Use a).