Approximating with Taylor polynomials

1. Find an upper bound on the error in using a 6th degree Taylor polynomial based at 0 to approximate $\cos(0.21)$.

2. Find an upper bound on the error in using a 6th degree Taylor polynomial based at 0 to approximate $e^{0.43}$. Hint: For all t between 0 and 1, we have $e^t < e^1 < 3$.

3. Use a Taylor polynomial to approximate $\sin(0.032)$ within a tolerance of $\pm 10^{-8}$.

4. Use a Taylor polynomial to approximate $e^{0.09}$ to within a tolerance of $\pm 10^{-8}$.