Numerical Analysis I
Homework 1

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1. Determine the first two nonzero terms of the Taylor series expansion about zero for the following.

   (a) $e^{\cos x}$

   (b) $\sin(\cos x)$

2. Write the Taylor Series for the function $f(x) = x^3 - 2x^2 + 4x - 1$, using $x = 2$ as the point of expansion; that is, write a formula for $f(2 + h)$.

3. For small x, the approximation $\sin x \approx x$ is often used. For what range of x is this good a relative accuracy of $\frac{1}{2} \times 10^{-14}$?