MATH **126** Quiz **Jan. 16** **Name:**

No books, notes or graphing calcuators. Please turn off your cell phones. Show ALL your work.

1. Here is the Taylor series for the function $f(x) = \cos x$ based at $a = 0$:

$$\cos x = 1 - \frac{x^2}{2} + \frac{x^4}{4!} + \cdots = \sum_{n=0}^{\infty} (-1)^n \frac{x^{2n}}{(2n)!}$$

(a)[3pt] Write the $12^{\text{th}}$ Taylor polynomial for $f(x) = \cos x$ based at $a = 0$.

(b)[7pt] Find $n$ such that the error $|\cos x - T_n(x)|$ is at most 0.01 on the interval $[-1, 1]$.