

You will have twenty minutes to take this quiz. Read the instructions carefully. There are more questions on the back of this page.

1. (4 points) *You do not need to show your work. Only the answer will be graded.* True or false? Please circle your answer.

• $T_{\infty} \cos(2x^3) = \sum_{n=0}^{\infty} \frac{2^{2n+1} x^{6n+3}}{(2n+1)!}$ **True** **False**

• $T_{2015} \sum_{n=0}^{1848} 3x^n = \sum_{n=0}^{1848} 3x^n$ **True** **False**

• $f^{(42)}(0) = 0$, where $f(x) = \cos(x^2)$ **True** **False**

• $T_3 \frac{e^{x^9}}{1+x} = 1 + x + x^2 + x^3$ **True** **False**

2. (6 points) Show your work. Partial credit may be awarded. Show that $|\frac{1}{2} - \frac{1}{e}| \leq \frac{1}{3!}$. Hint: $\frac{1}{2} = 1 + \frac{-1}{1} + \frac{(-1)^2}{2!}$ is the approximation obtained from the second Taylor polynomial of e^x .