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.

   - \( T_\infty \sin(2x^3) = \sum_{n=0}^{\infty} \frac{2^{2n+1}x^{6n+3}}{(2n+1)!} \) \hspace{1cm} True \hspace{0.5cm} False

   - \( T_{2015} \sum_{n=0}^{2015} 3x^{2n} = \sum_{n=0}^{2015} 3x^{2n} \) \hspace{1cm} True \hspace{0.5cm} False

   - \( f^{(40)}(0) = 0, \) where \( f(x) = \cos(x^2) \) \hspace{1cm} True \hspace{0.5cm} False

   - \( T_3 \frac{\sin(x^4)+1}{1+x} = 1 - x + x^2 - x^3 \) \hspace{1cm} True \hspace{0.5cm} False
2. (6 points) Show your work. Partial credit may be awarded. Show that \(|5 - e^2| \leq \frac{9}{3!}2^3\).

Hint: \(5 = 1 + \frac{2}{1} + \frac{(2)^2}{2!}\) is the approximation obtained from the second Taylor polynomial of \(e^x\).

Second hint: \(e < 3\).