

MA 2733

Worksheet 8 – October 28, 2015

Name _____

1. Use Taylor's Coefficient Theorem to directly show that the Taylor series for $\sin x$ is

$$\sum_{k=0}^{\infty} \frac{(-1)^k}{(2k+1)!} x^{2k+1}$$

2. Find a power series representation around 0 for $f(x) = \frac{\sin x^2}{x^2}$.

Hint: first find a power series representation for $\sin x^2$. What is the first term of this series?

3. Calculate $\sin 1$ to within 0.01.

Hint: Alternating Series Estimation may be helpful.

4. Let $f(x)$ be an antiderivative of $\cos x^2$ with $f(0) = 2$. Find a power series representation for $f(x)$.