Math 253 GWS 8 - 8.7 Introduction to Taylor and Maclaurin Series

Name:_____

1. Find the Maclaurin series for $f(x)$ using the definition of a Maclaurin series. What is the radius of convergence?

   $f(x) = \ln(1 + x)$

2. Find the Taylor series for $f(x)$ centered at the given value of a.

   $f(x) = \sin(2x), \qquad a = \frac{\pi}{4}$

3. Prove that the Maclaurin series, $M(x)$, for $\sin(x)$ converges to $\sin(x)$. That is, prove that $M(x) = f(x)$ for all x.