

**Problem Set 4    Calc 2    Due 11/1/2004**

Each problem is worth 5 points. For full credit provide complete justification for your answers.

1. a) Find the Taylor polynomials of degree 5 and 7 for the function  $f(x) = \arctan x$ .  
b) Use the polynomials from part a) to approximate  $\arctan(0.1)$ ,  $\arctan(1)$ , and  $\arctan(2)$ .
2. a) Find the radius and interval of convergence of the Taylor series for  $f(x) = \arctan x$ .  
b) Explain what your answer in part a) says about the accuracy of the values you found in 1. b).
3. a) Find the Taylor polynomials of degree 5 and 7 for the function  $f(x) = \sin x$ .  
b) Use the polynomials from part a) to approximate  $\sin(0.1)$ ,  $\sin(1)$ , and  $\sin(2)$ .
4. a) Find the radius and interval of convergence of the Taylor series for  $f(x) = \sin x$ .  
b) Explain what your answer in part a) says about the accuracy of the values you found in 3. b).