

**MATH 166**  
**SUMMER 2011**  
**QUIZ 23**

1. Consider the function

$$f(x) = \ln(x), \quad x > 0.$$

- a) (5 pt) Find a power series for this function centered at  $x = 1$ .
- b) (5 pt) Find the interval and radius of the series that you found in part a).
- c) (5 pt) Use this to find an infinite series for  $\ln(\frac{1}{2})$ .
- d) (5 pt) How many terms from the series from part c) are need to estimate  $\ln(\frac{1}{2})$  with error no more than  $\frac{1}{100}$ .