

# Math 330 Reading Questions

Sections 5.1 and 5.2

\_\_\_\_\_ NAME

*Read pages 182–188 in the textbook and answer the following questions. This sheet will be checked for completeness at the beginning of the next class.*

1. What is a *finite difference* approximation?
2. What does it mean if an approximation to a derivative is a *first-order* approximation?
3. How many sample points are required to approximate the  $n$ th order derivative  $u^{(n)}(x)$ ?
4. What does the centered difference quotient represent geometrically?
5. What does the notation  $u_{j,m}$  represent in the text?
6. What does  $\mathbf{u}^{(j+1)}$  represent in the text, and how is it computed from  $\mathbf{u}^{(j)}$ ?