

## Math 110 (Section 002) Learning Objectives

---

*Students should be able to do the following things by the end of each respective unit. Additions may be made as the term progresses.*

### **Approximation**

1. Find the linear approximation to a function  $f$  at  $a$ , given functions for which the derivative  $f'(a)$  can be found.
2. Identify good candidates for 'a' when using linear approximation to determine  $f(x) = f(a + \textit{small})$ .
3. Sketch the graph of a linear approximation to a function at a point, and use the graph to determine the sign of the remainder.
4. Use linear approximation to estimate predictions of nonlinear mathematical models.
5. Explain why a linear approximation is generally better than a constant approximation.
6. Find the approximations of degree 'n' for  $e^x$ ,  $\sin x$  and  $\cos x$  about  $a = 0$ .
7. Use Newton's Method to approximate roots of functions.