1. Do 12.1 on page 96 of Trefethen and Bau.

2. **MATLAB EXERCISE – Turn in printouts of your programs and plots:** Do 12.2 on page 96 of Trefethen and Bau. Example 1.1 is on page 4, and Figure 11.1 is on page 79. For this problem you are given $\mathbf{d} \in \mathbb{R}^n$, where the j^{th} entry of $\mathbf{d}$ is interpreted as being an $n-1$ degree polynomial p's value at $x_j = -1 + \frac{2j}{n}$ for $j = 1, \ldots n$. That is,

$$d_j = p\left(-1 + \frac{2j}{n}\right) = p(x_j)$$

   for $j = 1, \ldots n$. Our objective is to compute a new vector $\mathbf{y} \in \mathbb{R}^m$, for $m \geq n$, with entries $y_k = p(-1 + \frac{2k}{m})$ for the same polynomial p. Part (d) is asking how well we do if the trivial polynomial $p(x) = 1$ generates our given data $\mathbf{d}$.

3. **MATLAB EXERCISE – Turn in printouts of your programs and plots:** Do 12.3 on page 96 of Trefethen and Bau.

4. **MATLAB EXERCISE – Turn in printouts of your programs and plots:** Do 13.3 on page 101 of Trefethen and Bau. For part (a) the book is asking you to compute $p(x)$ by summing it as written above (a) for each value of x.

5. Do 14.1 on page 107 of Trefethen and Bau. Use the precise book definition of $\mathcal{O}()$ discussed on pages 104 and 105. (Note, furthermore, that this definition is indeed completely consistent with our lecture discussions!)

6. Do 15.2 on page 113 of Trefethen and Bau.