11.9: 8 $\sin x = \sum_{n=0}^{\infty} \frac{(-1)^n x^{2n+1}}{(2n+1)!} \Rightarrow x^2 \sin x = x^2 \left(\sum_{n=0}^{\infty} \frac{(-1)^n x^{2n+1}}{(2n+1)!} \right) = \sum_{n=0}^{\infty} \frac{(-1)^n x^{2n+3}}{(2n+1)!} = x^3 - \frac{x^5}{3!} + \frac{x^7}{5!} - \frac{x^9}{7!} + \dots$

11.9: 17 $\frac{1}{1-x} = \sum_{n=0}^{\infty} x^n = 1 + x + x^2 + x^3 + \dots \Rightarrow \frac{d}{dx}(\frac{1}{1-x}) = \frac{1}{(1-x)^2} = 1 + 2x + 3x^2 + \dots = \sum_{n=1}^{\infty} nx^{n-1} = \sum_{n=0}^{\infty}(n+1)x^n$

11.9: 23 $|R_2(x) = \left| \frac{e^c x^3}{3!} \right| < \frac{3^{0.1}(0.1)^3}{3!} < 1.87 \times 10^{-4}$, where c is between 0 and x.

11.9: 24 $|R_2(x) = \left| \frac{e^c x^3}{3!} \right| < \frac{(0.1)^3}{3!} < 1.67 \times 10^{-4}$, where c is between 0 and x.

11.9: 25 $|R_4(x) = \left| \frac{\cosh c}{5!} x^5 \right| = \left| \frac{e^x + e^{-x}}{2} \frac{x^5}{5!} \right| < \frac{1.65 + \frac{1}{1.65}}{2} \cdot \frac{(0.5)^5}{5!} = (1.13)\frac{(0.5)^5}{5!} \approx 0.000294$