1. $f(x) = \cos(x) \wedge p_4(x) = 1 - \frac{x^2}{2} + \frac{x^4}{4!}$

   $f(x) - p_4(x) = E_4(x) = -\sin(c)\frac{x^4}{5!}$

   $|-\sin(c)\frac{x^4}{5!}| \leq 5 \cdot 10^{-5}$

   $|-\sin(c)\frac{x^4}{5!}| \leq$

   $|\sin(c)|\frac{x^4}{5!} \overset{|\sin(x)|\leq x}{\leq}$

   $|c|\frac{x^4}{5!} \overset{|c|\leq|x-x_0|}{\leq}$

   $|x|\frac{x^4}{5!} =$

   $\frac{|x|^5}{5!} \leq 5 \cdot 10^{-5} \Leftrightarrow$

   $|x| \leq \sqrt[5]{5! \cdot 5 \cdot 10^{-5}}$

2. $f(x) = \sin(x) \wedge p_1(x) = x$

   $f(x) - p_2(x) = E_1(x) = \frac{-\sin(c)}{2}x^2$

   $\frac{|\sin(c)|}{2} \leq \frac{|c|x^2}{2} \leq$

   $\frac{|x|x^2}{2} \leq$

   $\frac{|x|^3}{2} \leq 10^{-3} \Leftrightarrow$

   $|x| \leq \sqrt[3]{2 \cdot 10^{-3}}$