1. $p_2(x) = 1 + \frac{x}{2} - \frac{x^2}{8} + \frac{3}{8(1+c)^{\frac{5}{2}}} \frac{x^3}{3!}$

2. $R_2\left(\frac{2}{10}\right) = \frac{3}{8(1+c)^{\frac{5}{2}}} \frac{\left(\frac{2}{10}\right)^3}{3!} =$

$$\frac{\cancel{3}}{8(1+c)^{5/2}} \frac{8}{10^3(\cancel{3!}^{2})} =$$

$$\frac{1}{8(1+c)^{5/2}} \frac{\cancel{8}^{4}}{10^3(\cancel{2})} =$$

$$\frac{1}{\cancel{8}^{2}(1+c)^{5/2}} \frac{\cancel{4}^{1}}{10^3} =$$

$$\frac{1}{10^3(1+c)^{5/2}}$$