

$$P(x) = P(a) + P'(a)(x-a) + P''(a) \frac{(x-a)^2}{2!} + P'''(a) \frac{(x-a)^3}{3!} + P^{(4)}(a) \frac{(x-a)^4}{4!}$$

$$P_3(x) = P(0) + P'(0)x + P''(0) \frac{x^2}{2} + P'''(0) \frac{x^3}{6} + R_3(x)$$

$$P_3\left(\frac{\pi}{30}\right) =$$

$$P(x) = \sin x \quad P'(x) = \cos x \quad P''(x) = -\sin x \quad P'''(x) = -\cos x$$

$$\text{Denn } P(0) = 0, \quad P'(0) = 1 \quad P''(0) = 0 \quad P'''(0) = -1$$

$$\text{Denn } P_3\left(\frac{\pi}{30}\right) = \frac{\pi}{30} - \frac{\left(\frac{\pi}{30}\right)^3}{6} = \frac{\pi}{30} - \frac{\pi^3}{162000}$$

$$\approx \underline{\underline{0,104528}}$$

$$R_3(x) = \sin\left(\frac{\pi}{30}\right) - P_3\left(\frac{\pi}{30}\right) \approx$$

$$= \sin\left(\frac{\pi}{30}\right) - \frac{\pi}{30} + \frac{\pi^3}{162000}$$

$$\approx \underline{\underline{1,04917 \times 10^{-7}}}$$