Solutions

Each answer shows the steps, then the **result**.

2.1

- $|R_n(x)| \leq \dfrac{\max|f^{(n+1)}(z)|}{(n+1)!}|x-a|^{n+1}$

2.2

- $|f^{(n+1)}(z)| \leq 1$ (derivatives of cos are bounded by 1)

2.3

- $\dfrac{1}{6}(0.001) = \dfrac{0.001}{6} \approx 1.67 \times 10^{-4}$

3.1 B

- $(n+1)!$ is in the denominator

3.2

(a)

- $|R_2(0.5)| \leq \dfrac{\max|f'''|}{3!}(0.5)^3$

(b)

- $\leq \dfrac{2}{6}(0.125) = \dfrac{0.25}{6} \approx 0.0417$

3.3

- $n = 1$, $|f''(z)| = |-\sin z| \leq 1$; $|R_1(0.3)| \leq \dfrac{1}{2!}(0.3)^2 = \dfrac{0.09}{2} = 0.045$