

Question 13: Let $P_2(x) = \sum_{i=0}^2 f(x_i)L_i(x)$ be the quadratic Lagrange interpolating polynomial which interpolates a function f at x_0, x_1, x_2 . If $L_0(x) = \frac{1}{8}(x^2 - 4x + 3)$ and $L_1(x) = \frac{1}{4}(-x^2 + 2x + 3)$, then $L_2(x)$ is:

- (a) $-\frac{1}{8}(x^2 - 1)$ (b) $\frac{1}{8}(x^2 - 1)$ (c) $\frac{1}{8}(x^2 - 4x)$ (d) $-\frac{1}{8}(x^2 - 4x)$

Question 14: Let $M = \max_{x_0 \leq x \leq x_1} |f''(x)|$ for some function f . Then the error E in approximating $f(x)$ by a linear lagrange polynomial at x_0 and x_1 satisfies:

- (a) $|E| \leq \frac{hM^2}{8}$ (b) $|E| \leq \frac{hM}{8}$ (c) $|E| \leq \frac{h^2M}{8}$ (d) $|E| \leq \frac{h^2M}{4}$