

Quiz the Last

1. Find the third order Fourier approximation to $f(x) = 3x$.
2. Convert $\{1, x\}$ into an orthogonal set with respect to the inner product $\langle f, g \rangle = \int_0^2 f(x)g(x)dx$.
3. Let $L: P_2(x) \rightarrow P_1(x)$ be given by $L(p) = p' + 2p''$. Let $\mathcal{B} = \{1, x, x^2\}$ be a basis for P_2 , and let $\mathcal{B}' = \{1, x + 1\}$ be a basis for P_1 . Find the matrix representation of L with respect to \mathcal{B} and \mathcal{B}' : ${}_{\mathcal{B}'}[L]_{\mathcal{B}}$.