

You are going to approximate the function $f(x) = \sqrt{x+1}$ using the nodes $x_0 = 1$, $x_1 = 1.5$, $x_2 = 2.0$, and $x_3 = 3$. The values of f that you need are $f(1) = 1.41421$, $f(1.5) = 1.58114$, $f(2.0) = 1.73205$, and $f(3) = 2.0$.

1. Determine the $L_{n,k}$ polynomials for this set of nodes. Write each of these polynomial in standard form, *i.e.*, $a_n x^n + a_{n-1} x^{n-1} + \dots + a_1 x + a_0$.