1. [Simpson’s 1/3 rule]
   In the derivation of the quadrature formula
   \[ Q_n(f) = I(P_n,a,b) = a_0 f_0 + \cdots + a_n f_n \]
   if \( n = 2 \), the coefficients \( a_0, a_1 \) and \( a_2 \) would be \( (b-a)/6 \), \( 4(b-a)/6 \) and \( (b-a)/6 \), respectively. Why?

2. Give me all the reasons you know about the advantages of piecewise polynomial interpolation over single polynomial interpolation.