1. Write a MAPLE procedure to generate the formula for the radial Coulomb wave function \( P_{nl}(r) \).

2. Use your procedure to evaluate
   
   (a) \( \int_0^\infty P_{31}^2(r) \, dr \)
   
   (b) \( \int_0^\infty P_{31}(r) P_{21}(r) \, dr \)

3. Use your procedure to generate formulas for all 5 of the \( n = 5 \) radial wave functions. Plot each of the 5 wave functions.