

Problem Set 3**Physics 607****(due Sept. 17, 2001)**

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.