

Physics 217
Optional Problem Set 2
Due: Friday, December 7, 2018

1. (20 points) Consider the differential equation for the Legendre polynomials

$$(1 - z^2) \frac{d^2 P_\ell}{dz^2} - 2z \frac{dP_\ell}{dz} + \ell(\ell + 1)P_\ell = 0 \quad (1)$$

Perform all the steps that were only outlined in class to arrive at the general solution.

As discussed in class, this problem set can take the place of half of another one for which a lower score was obtained. Final count for the course grade will include 11 from the 13.5 problem sets.