

## PHYS 380

### READINGS AND PROBLEMS FOR WEEKS 3/4

Read sections 12 - 16 in Chapter 12 of Boas. This will introduce us to properties and solutions of Bessel functions and the Bessel equation.

Then, work on some of these :

1. Show  $\frac{d}{dx} [x^p J_p(x)] = x^p J_{p-1}(x)$

2. Show eq. 15.2, p. 592

3. Problem 7 a, p. 593 Boas.

4. Show  $J_{-1/2}(x) = \sqrt{\frac{2}{\pi x}} \cos x$

$\left( \text{Hint: } \Gamma(n + 1/2) = \frac{(2n-1)(2n-3)\dots(3)(1)\sqrt{\pi}}{2^n} \right)$

5. Try to work through problem 13 on p. 594 to prove the assertion (eq. 16.1) on p. 593.