PHYS 328
HOMEWORK #9

Due : 14 Nov. 2013

1. Given that

$$\int_0^\infty e^{-ax} \sin k\,x \ dx \ = \ \frac{k}{a^2 + k^2}$$

use differentiation with respect to parameters to find the integrals of :

$$\int_0^\infty x\, e^{-ax} \sin kx \, dx$$

$$\int_0^\infty x\, e^{-ax} \cos kx \, dx$$

you may use Mathematica to verify your results, but you must show how you do compute these integrals using the indicated technique.

2. Problem 5.8 page 158

3. Problem 5.12 ppp 158 - 159

4. Problem 5.28 page 171

5. Problem 6.42 part a) only, p. 249