

## Physics 451- Fall 2012

### Homework #4

Due Tuesday, Sep 11, by 7pm

Please place your assignment in the “Physics 451” slot across from N373 ESC.  
We will have help sessions twice a week, in N337 ESC (undergraduate lab):  
**T Th from 3 to 6 pm**

List of problems (from the textbook):

**1.9**

**1.14**

**2.1**

**2.2**

*Hints:*

Useful integrals for problem 1.9

$$\int_{-\infty}^{\infty} e^{-\alpha u^2} du = \sqrt{\frac{\pi}{\alpha}}$$

$$\int_{-\infty}^{\infty} u e^{-\alpha u^2} du = 0$$

$$\int_{-\infty}^{\infty} u^2 e^{-\alpha u^2} du = \frac{1}{2\alpha} \sqrt{\frac{\pi}{\alpha}}$$

Integration by parts:

$$\int f \frac{dg}{dx} dx = - \int g \frac{df}{dx} dx + [fg]$$