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

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

\[ \int_{-\infty}^{\infty} u e^{-\alpha u^2} \, du = 0 \]

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

Integration by parts:

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