

## Physics 451- Fall 2012

### Homework #3

Due Friday, Sep 7, 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):

1.4

1.5

1.7

1.8

*Hints:*

For pb 1.4, you may use the following factorization result

$$b^3 - 3a^2b + 2a^3 = (2a + b)(b - a)^2$$

Useful integral for pb 1.5:

$$\int x^2 e^{\alpha x} dx = \left[ \frac{e^{\alpha x}}{\alpha} \left( x^2 - \frac{2x}{\alpha} + \frac{2}{\alpha^2} \right) \right]$$

Integration by parts (for pb 1.7):

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