## Physics 471 - Fall 2008

## Homework \#2, due Friday, September 12

1. Griffiths problem 1.4, parts (a)-(d) only.
2. Griffiths problem 1.7.
3. Griffiths problem 1.9.

Hints: For part (b), write all the derivatives of $\psi$ as polynomials in x times $\psi$ itself, then $\psi$ will factor out of the Schrodinger equation.
For part (c), you can save some work if you write $\left\langle\mathrm{p}^{2}\right\rangle$ in terms of $\left\langle\mathrm{x}^{2}\right\rangle$, which you have already calculated.
4. Griffiths problem 2.4. To calculate $\left\langle x^{2}\right\rangle$, use $\sin ^{2} \theta=[1-\cos (2 \theta)] / 2$, then integrate by parts, then finally use the integrals on the inside back cover of your textbook. (If you find an easier way, let me know.)

