

Answers to Even # Problems
Homework Assignment #3
Physics 273

2a) 0

2b) $\frac{a^2}{2}$

2c) 0

2d) $\frac{1}{2} \left(\frac{\hbar}{a} \right)^2$

8) $\lambda = \frac{8mL^2c}{h(n^2 - 1)}$

10) $\Delta E = 1.1 \text{ eV}$

12) $\langle x^2 \rangle = l^2 \left[\frac{1}{3} - \frac{1}{2(n\pi)^2} \right] \quad \langle p^2 \rangle = \left(\frac{n\pi\hbar}{L} \right)^2 \quad \langle x^2 \rangle \langle p^2 \rangle = \hbar^2 \left(\frac{n^2\pi^2}{3} - \frac{1}{2} \right)$

18) $\psi(x, t) = \frac{1}{\sqrt{2}} \left[u_1(x)e^{-iE_1t/\hbar} + u_2(x)e^{-iE_2t/\hbar} \right]$

20) $P = \frac{1}{2} \left[1 + \frac{8}{5\pi} \cos \left(\frac{5\hbar\pi^2}{2mL^2} t \right) \right] \quad T = \frac{8mL^2}{5h}$