

## HW 11 Problem

Due date delayed to  
10/14/2019

what is the average position

$$\begin{aligned} \psi(x) = & a \left( \frac{m\omega}{\pi\hbar} \right)^{1/4} e^{-m\omega x^2/2\hbar} \\ & + b \left( \frac{4}{\pi} \left( \frac{m\omega}{\hbar} \right)^3 \right)^{1/4} x e^{-m\omega x^2/2\hbar} \end{aligned}$$

where  $a^2 + b^2 = 1$

(you can assume these are real, positive numbers).

$$\langle \psi | x | \psi \rangle = \int_{-\infty}^{\infty} dx \, x |\psi(x)|^2 \quad (6.14)$$