Name

5.73

Quiz 4

A normalized Gaussian centered at x_0 with variance $(\Delta x)^2$ is described by

$$G(x;x_0,\Delta x) = (2\pi)^{-1/2}\left(1/\Delta x\right)e^{-(x-x_0)^2/\left[2(\Delta x)^2\right]}.$$

A. What is the value of the Gaussian function at linecenter, $x = x_0$?

B. What kind of function is $[G(x;x_0,\Delta x)]^2$?

C. What is the variance of $[G(x;x_0,\Delta x)]^2$?

D. What is the center value of k (i.e., k_0) and the variance of k for $\Psi(x,0) = (31)^{-3/4}\int_{-\infty}^{\infty} e^{-(49/9)(k-5)^2}e^{ik(x-2)}e^{i5}dk$?

E. What is the center value of x (i.e., x_0)?

5.73 Quantum Mechanics I
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