You will need Griffiths (3rd ed.) for this problem set (and for some future ones), not only because the problems themselves are from Griffiths, but because some of them refer to equations in Griffits.

Now that we are dealing with continuous variables, you will often need some integral formulas. You can find these either in Griffiths (inside back cover), or online; feel free to use wolframalpha.

When doing integrals, it is best to write down general formulas before plugging in specific values; for example, you should write $\int_0^\pi \sin(x)dx = -\cos(x)|_0^\pi = 2$.

However, sometimes integrals can be evaluated explicitly only for certain values of their range. For example, there's no nice formula for $\int_a^b e^{-x^2}dx$ for general a and b, but `wolfram-alpha` will tell you that $\int_{-\infty}^{\infty} e^{-x^2}dx = \sqrt{\pi}$.

1. *Gaussian Probability Distribution*

   Griffiths 3rd ed., Problem 1.3

   Side note: what Griffiths calls $\rho(x)$, the probability density, was called $D(x)$ in class.

2. *Probability Distribution From a Wavefunction*

   Griffiths 3rd ed., Problem 1.5

3. *Another Probability Distribution From a Wavefunction*

   Griffiths 3rd ed., Problem 1.16 subproblems a, b, d, f *only*.

4. *One More Quick Question*

   In all three problems above you are asked to find a normalization constant called A (among other things). But in fact there's a big difference between what's called A in problem 1 — namely, it is unique — compared to what's called A in the other two problems. Explain why A is not uniquely determined in problems 2 and 3.