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Selected Problems
1. Create a quantized Gaussian kernel with $\sigma = 1.5$.
2. Show that the box filter
   \[
   \frac{1}{9} \begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}
   \]
   is separable
3. What is the Fourier transform of $f(x) = \sin(k_0 x)$ where $k_0$ is a constant?
4. What is the result of convolving a discrete signal $[1 \ 2 \ 0 \ 3 \ 3]$ with the kernel
   \[
   \frac{1}{5} [1 \ 1 \ 1 \ 1 \ 1]
   \]
   ?
5. Demonstrate that the 2D Gaussian is a separable function.