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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.