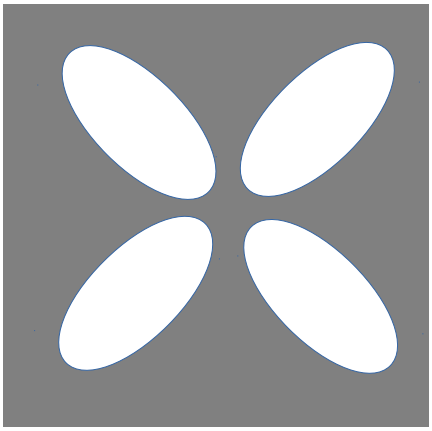
Sample Exam 1 for FT

1. Rank (from highest to lowest) the test patterns below according to peak correlation values that will be obtained with the target pattern in the first column. (15 pts)

Target	*TEST1*	*TEST2*	*TEST3*	*TEST4*	*TEST5*	*TEST6*	*TEST7*
B	**I**	**P**	**8**	**H**	**X**	**E**	**O**

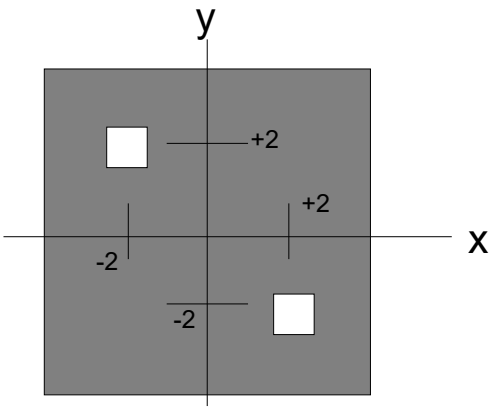
2. A diffraction pattern is described as four Airy patterns centered at (-2,2), (2,2), (2,-2) and (-2,2). Sketch the pattern then express ANALYTICALLY the Fourier Transform of the diffraction pattern. (20 pts)

3. Sketch the Fourier Transform of the aperture shown below. (15 pts)



---------Sample Exam 2--------

1. Write a Scilab script that will generate the function below. Two squares are symmetric about the origin along the diagonal. Their sides are 1 unit each.. Height of squares is 1 unit while the rest of the field is zero. (4 pts)



2. What is the convolution of the function given in Question 1 with the following function : $G(x, y) = \delta(x-6, y-6) + \delta(x+7, y-7) + \delta(x+8, y+2)$. Sketch . (8 pts)
3. Approximately sketch the abs(FFT) of the function shown in Question 1. (8 pts)