

### Assignment-6

1. Find the Fourier transform of the function  $f(x) = \begin{cases} e^x, & -a < x < a \\ 0, & \text{otherwise} \end{cases}$
2. Find the Fourier cosine transform of the function  $f(x) = \begin{cases} \cos x, & 0 \leq x \leq a \\ 0, & \text{otherwise} \end{cases}$
3. Find the Fourier transform of the function  $f(x) = e^{-ax^2}$ ,  $a > 0$ .
4. Find the Fourier cosine transform of the function  $f(x) = e^{-ax}$ ,  $a > 0$
5. Find the Fourier transform of the function  $f(x) = e^{-ax^2}$ ,  $a > 0$
6. Find the Fourier cosine transform of

$$f(x) = \begin{cases} 1 & , \text{ if } 0 < x < 1 \\ -1 & , \text{ if } 1 < x < 2 \\ 0, & x > 2 \end{cases}$$

7. Find the Fourier Cosine transform of the following

$$f(x) = \begin{cases} x, & 0 < x < 1 \\ 0, & \text{Otherwise} \end{cases}$$

8. Find the Fourier sine transform of the following

$$f(x) = \begin{cases} 1 - x^2, & |x| < 1 \\ 0, & \text{Otherwise} \end{cases}$$

