## PSG COLLEGE OF TECHNOLOGY, COIMBATORE - 641 004

## DEPARTMENT OF APPLIED MATHEMATICS AND COMPUTATIONAL SCIENCES 18XW47- Mathematical Computing Lab

## IV Sem. – M. Sc (SWS)

Internal Lab Test I - 20/02/2021

1. (a) Create a user defined function "correlation" to find the correlation coefficient of two variables x and y when values of x and y are given. Also, find the correlation coefficient of x and y whose values are given in the following table:

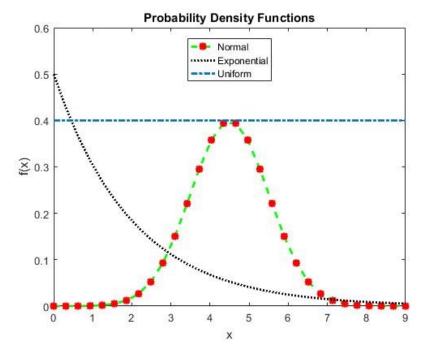
χ	70	9	80	7	65	83
		2		4		
y	74	8	63	8	78	90
		4		7		

The formula to find the correlation coefficient of x and y is  $r = \frac{\sum_{i=1}^{n} (x_i - \overline{x})(y_i - \overline{y})}{\sqrt{\sum_{i=1}^{n} (x_i - \overline{x})^2 \sqrt{\sum_{i=1}^{n} (y_i - \overline{y})^2}}}$ 

(b) Write a program to compute the value of the following series

$$-1^5+3^3-5^5+7^3-\cdots-201^5$$

2. (a) Plot the following three probability density functions as shown in fig.



where  $f_1(x) = \frac{1}{\sqrt{2\pi}} e^{\frac{-1}{2}(x-4.5)^2}$ ,  $f_2(x) = 0.5e^{-0.5x}$  and  $f_3(x) = 0.4$  in the interval 0 < x < 9.

(b) Plot the functions  $f_1(x)$ ,  $f_2(x)$  and  $f_3(x)$  given in sub division (a) as separate plots in a same page.