

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:

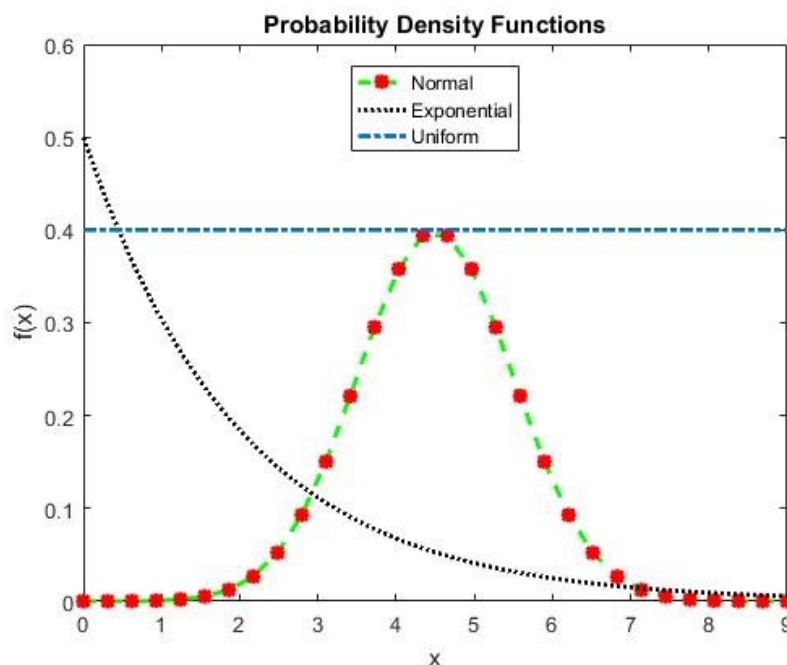
x	70	9	80	7	65	83
y	74	8	63	8	78	90

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

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

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

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.