250201073

Kemal Türk

Part A)

Figure 1 shows us when X takes a value what is gives as a U which means x-axis shows X, y-axis shows U values.

Figure 2 shows us the probability density function, U values is always around the 1 but X values is always getting bigger. U is blue, X is orange.

Figure 3 shows us the cumulative distribution function (cdf).

$E(X) = \int_0^1 \sqrt{x}\,dx = 2/3$

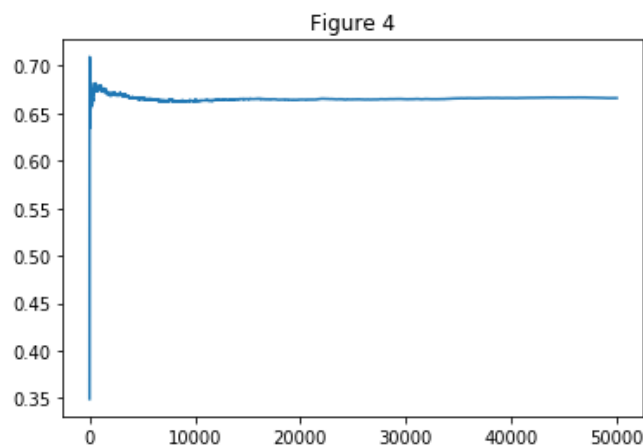$Var(X) = \int_0^1 (\sqrt{x} - 23)^2\,dx = 1/18$

Figure 4 goes to above 0.65 just like 0.66 which is 2/3, that means results are same with the calculations.
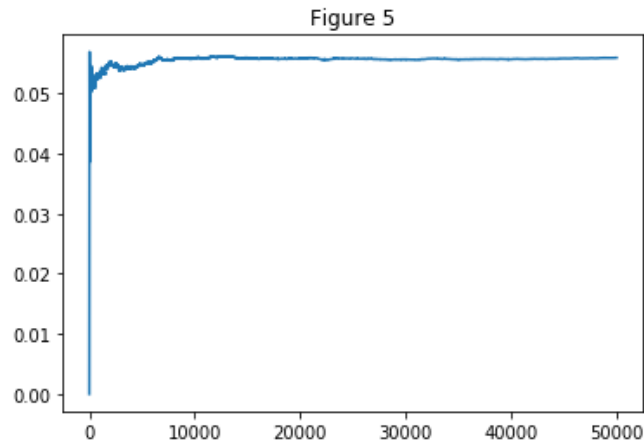
Figure 5

Figure 5 goes to above 0.05 but not reach to 0.06 and our calculations shows that variance of X is 1/18 which is 0.055, that means results are same with the calculations.

Part B)

Figure 6 is similar with Figure 2's X values because we are doing same thing with different methods.
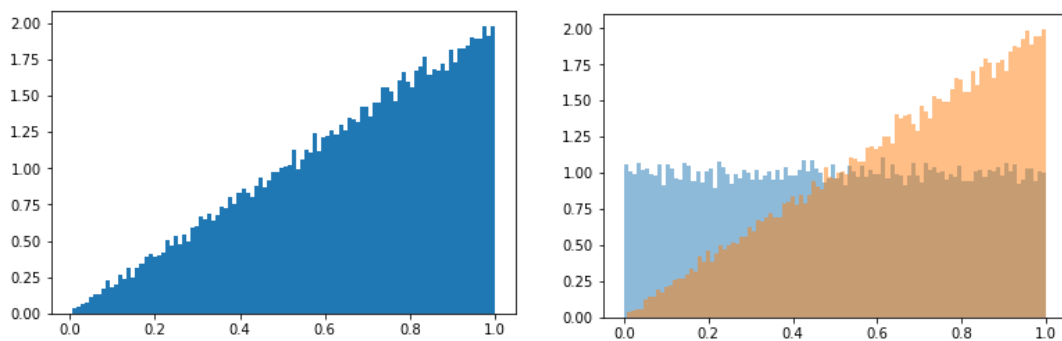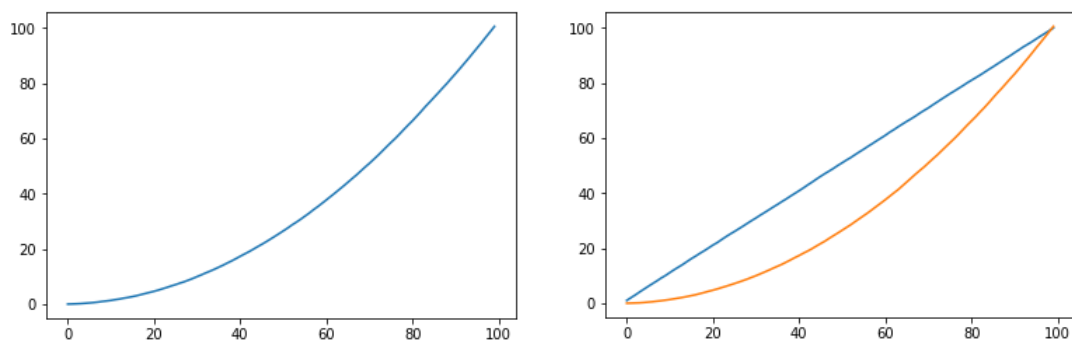

Figure 7 is similar with Figure 3's X values because we are doing same thing with different methods.

We get so close results with different random numbers, as we create more numbers results gets really close. Figure 4 – Figure 8 and Figure 5 – Figure 9 are shows the almost same results.
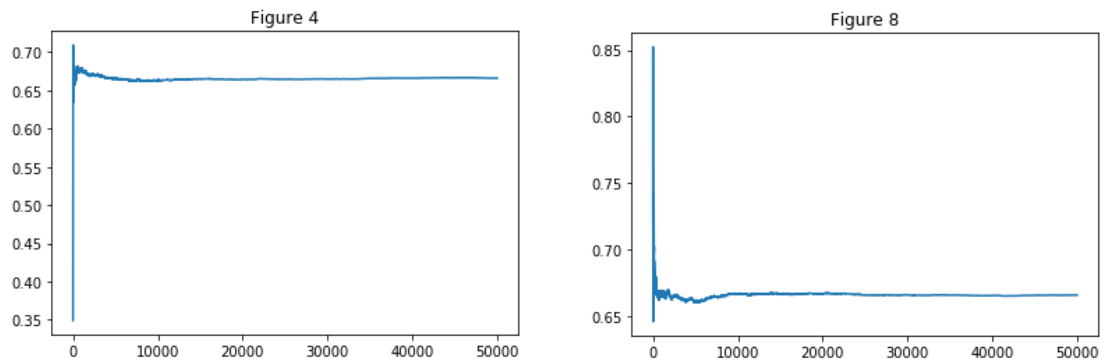
Figure 4 – Figure 8 :

Figure 5 – Figure 9 :