

CENG 222 HW3

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270201090

Part a figures:

Figure 1:

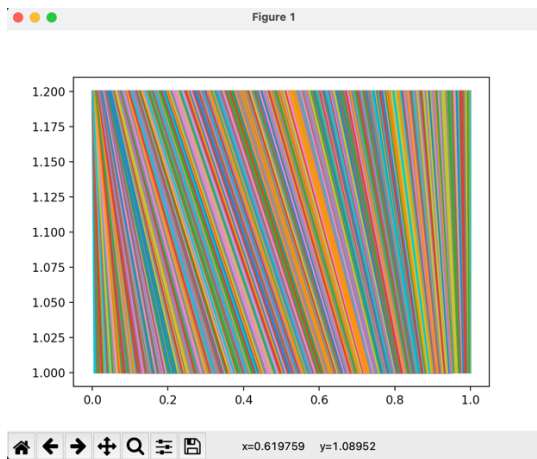


Figure 2:

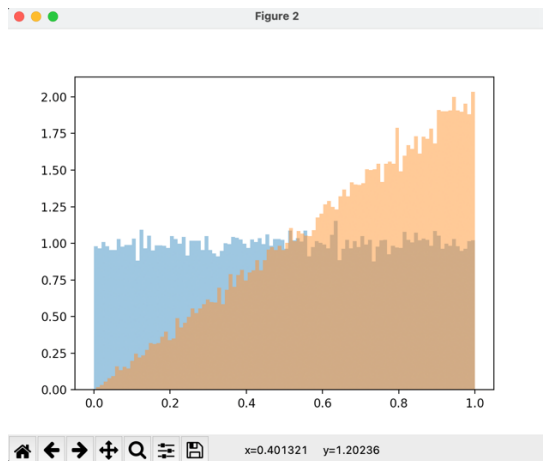


Figure 3:

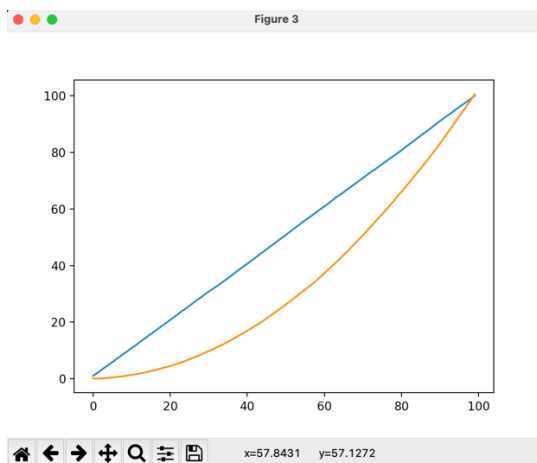


Figure 4:

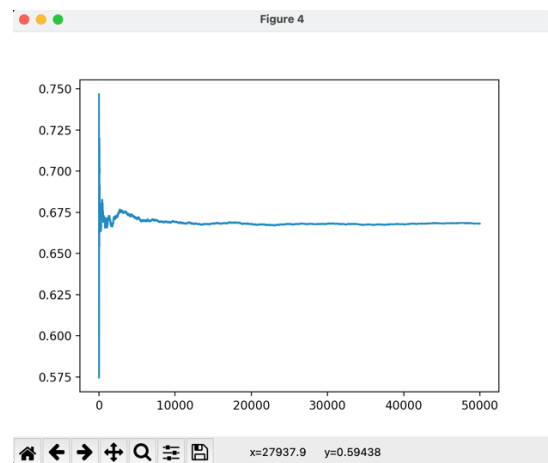
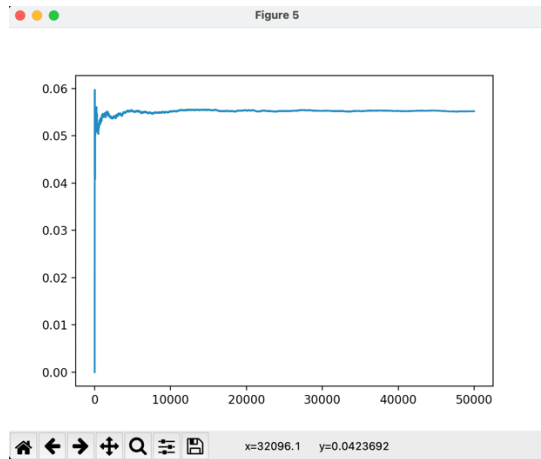


Figure 5:



Part b figures:

Figure 6:

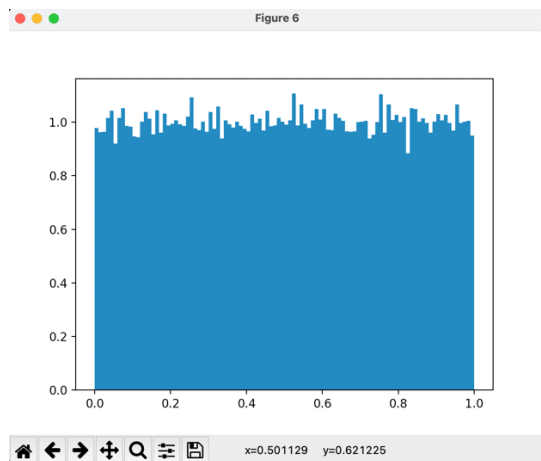


Figure 7:

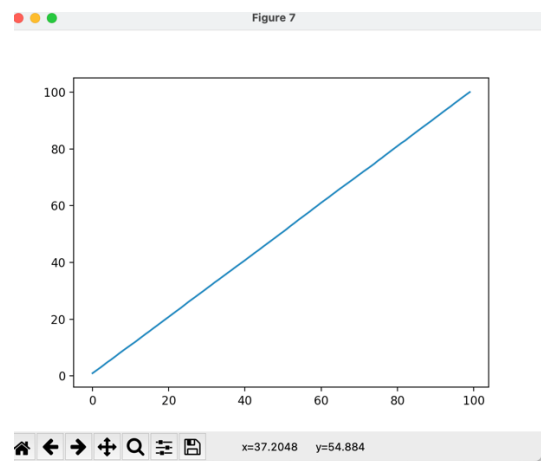


Figure 8:

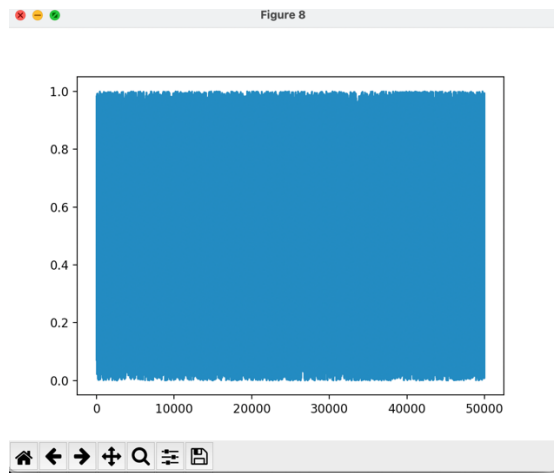
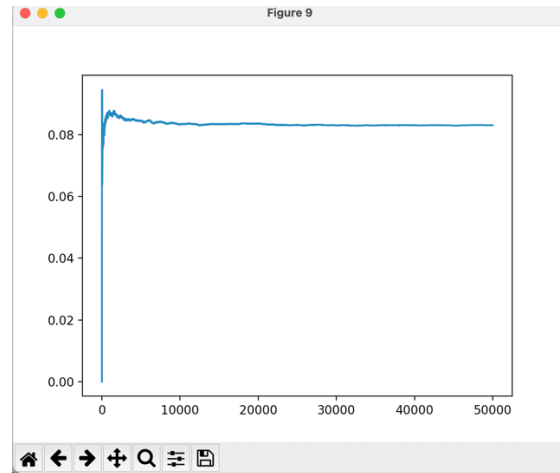


Figure 9:



$$\text{CDF} = F(x) = x^2 \quad 0 \leq x \leq 1$$

Converting CDF to PDF, we derivate CDF

$$\text{PDF} = f(x) = 2x \quad 0 \leq x \leq 1$$

$$\text{Theoretical Expected Value} = E[x] = \int_0^1 x f(x) dx = 0.666666$$

$$\text{Theoretical Variance} = E(x^2) - (E(x))^2 = \int_0^1 x^2 2f(x) dx - (\int_0^1 x f(x) dx)^2 = 0.055556$$