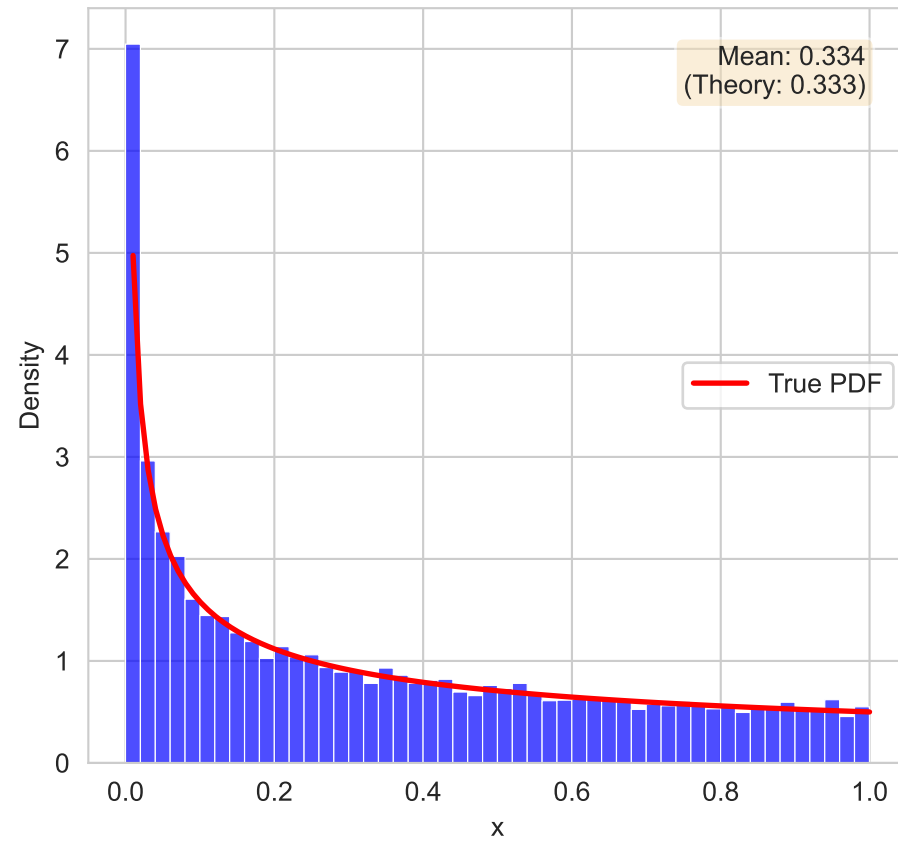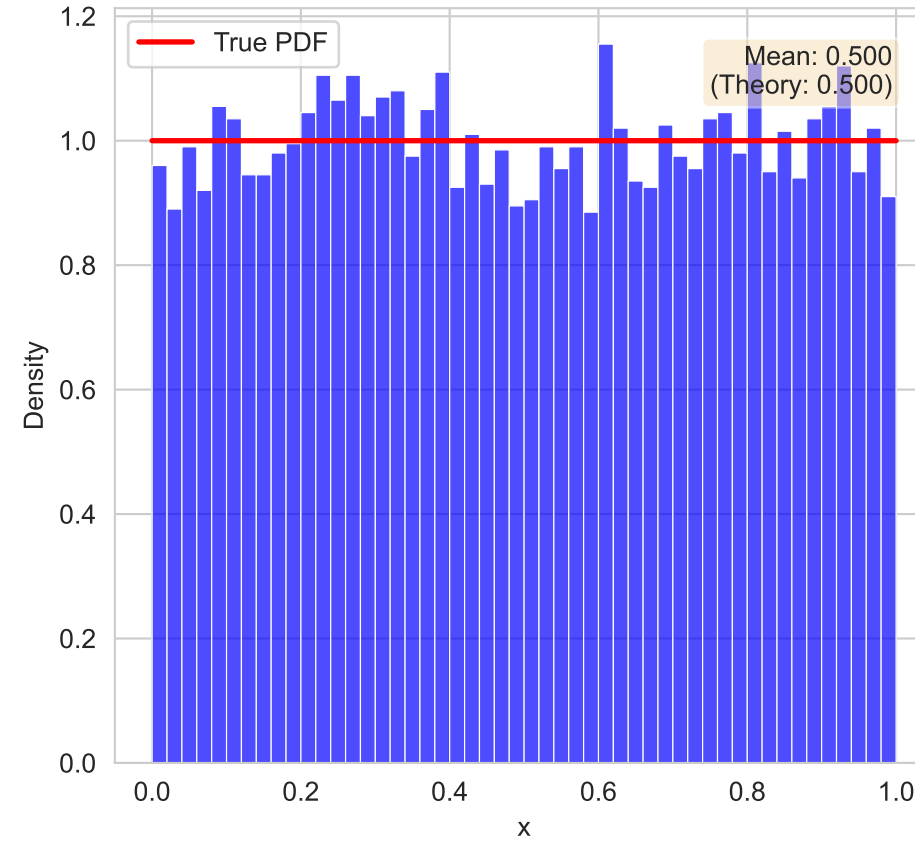Exercise 2.2: $U \sim U[0, 1] \rightarrow X = U^{1/a} \sim Beta(a, 1)$ for 10000 samples

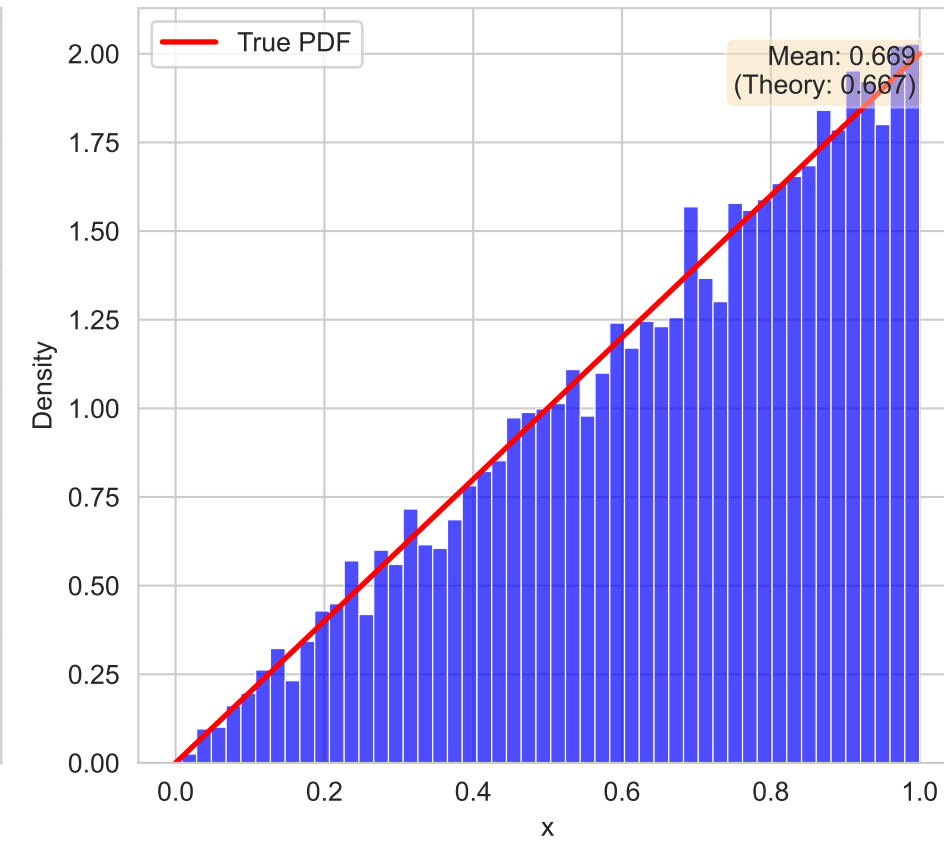**a = 0.5: X = U^(1/0.5) ~ Beta(0.5,1)**
Mean: 0.334 (Theory: 0.333)
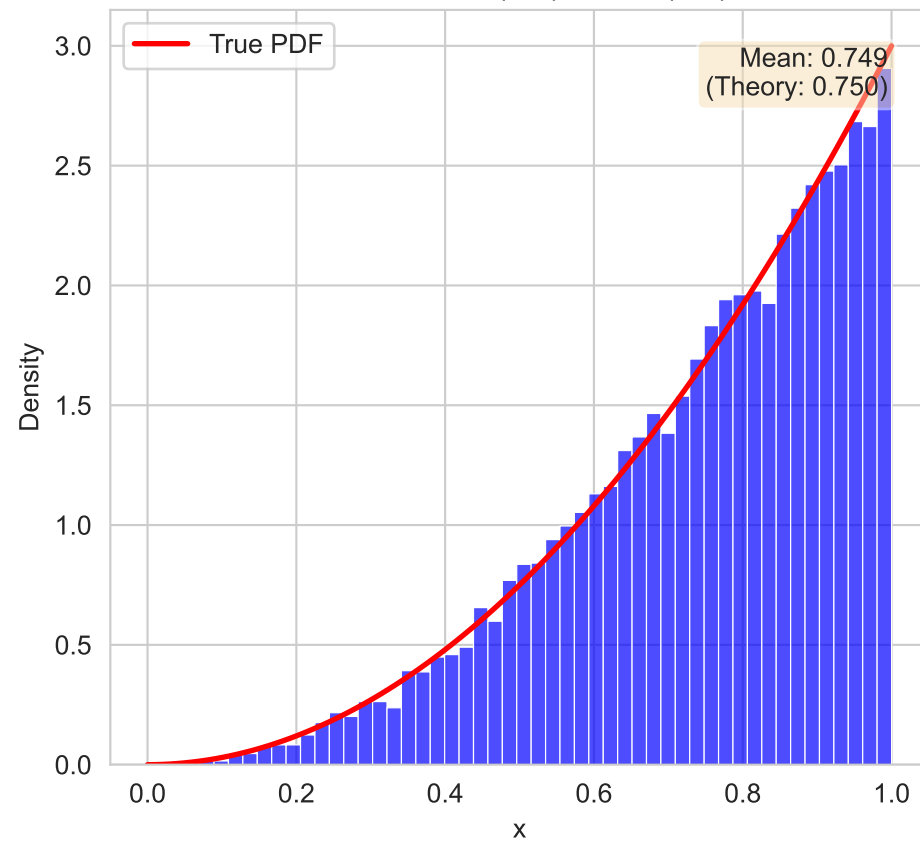True PDF

a = 1: X = U^(1/1) ~ Beta(1,1)
True PDF
Mean: 0.500 (Theory: 0.500)

a = 2: X = U^(1/2) ~ Beta(2,1)
True PDF
Mean: 0.669 (Theory: 0.667)

a = 3: X = U^(1/3) ~ Beta(3,1)
True PDF
Mean: 0.749 (Theory: 0.750)

a = 5: X = U^(1/5) ~ Beta(5,1)
True PDF
Mean: 0.834 (Theory: 0.833)

a = 10: X = U^(1/10) ~ Beta(10,1)
True PDF
Mean: 0.909 (Theory: 0.909)