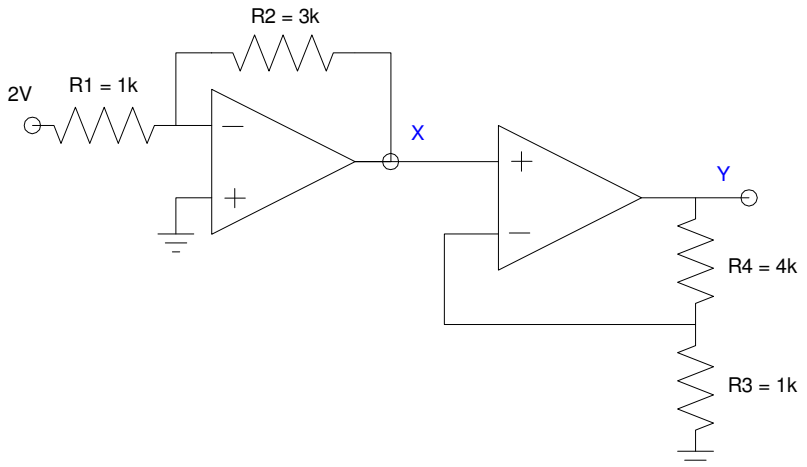
ECE 341 - Homework #9

Weibull Distribution, Central Limit Theorem. Summer 2023

Weibull Distribution

1) Determine and plot the cdf for the voltage, Y, in homework set #7 problem #3

2) Determine and plot the pdf for this voltage using a Weibull approximation for the cdf



Homework #7, problem #3. Find the pdf for the voltage at Y. All resistors are 5% tolerance

Central Limit Theorem

The mean and standard deviation for a 4, 6, and 8-sided die are

Die	d4	d6	d8
mean	2.5	3.5	4.5
standard deviation	1.1180	1.7078	2.2191
variance	1.2500	2.9166	5.2487

5) Let Y be the sum of rolling six 6-sided dice (homework #4 problem 4):

Y = 6d6

a) What is the mean and standard deviation of Y?

b) Using a normal approximation, what is the 90% confidence interval for Y?

c) Using a normal approximation, what is the probability that the sum the dice will be more than 29.5?

d) Compare these results to the actual odds (from homework #4)

6) Let Y be the sum of rolling twelve 6-sided dice (homework #4 problem 5):

Y = 12d6

a) What is the mean and standard deviation of Y?

b) Using a normal approximation, what is the 90% confidence interval for Y?

c) Using a normal approximation, what is the probability that the sum the dice will be more than 49.5?

d) Compare these results to the actual odds (from homework #4)

7) Let Y be the sum of rolling 2d4 + 3d6 + 4d8 (homework #4 problem 6)

Y = 2d4 + 3d6 + 4d8

a) What is the mean and standard deviation of Y?

b) Using a normal approximation, what is the 90% confidence interval for Y?

c) Using a normal approximation, what is the probability that the sum the dice will be more than 39.5?

d) Compare these results to the actual odds (from homework #4)