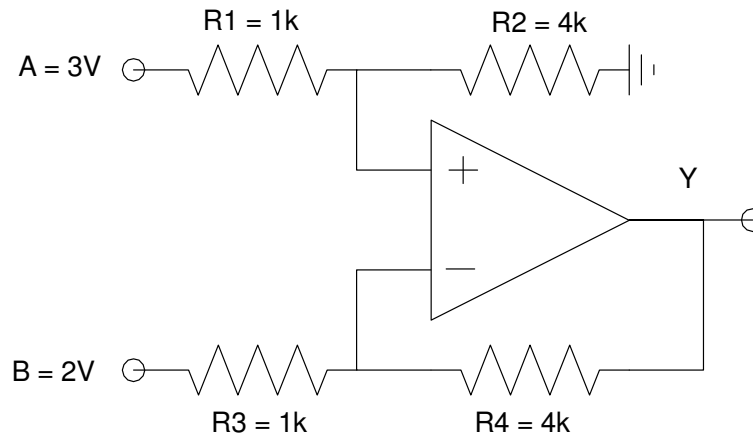# ECE 341 - Homework #9

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	d10	d12
mean	2.5	3.5	4.5	5.5	6.5
standard deviation	1.1180	1.7078	2.2191	2.8723	3.4521
variance	1.2500	2.9166	5.2487	8.25	11.9167

5) Let Y be the sum of rolling four 10-sided dice (homework #4 problem 4):

$$Y = 4d10$$

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 four 6-sided dice and two 8-sided dice (homework #4 problem 5):

Y = 4d6 + 2d8

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)

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

Y = d4 +d6 + d8 + d10 + d12

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)