

ECE 341 - Homework #7

Uniform and Exponential Distributions. Due Friday, May 28th

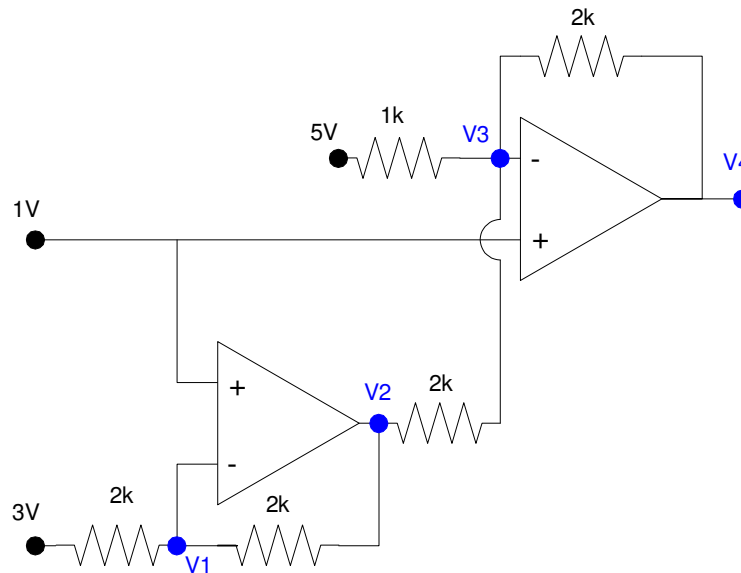
Please make the subject "ECE 341 HW#7" if submitting homework electronically to Jacob_Glower@yahoo.com (or on blackboard)

Uniform Distributions

Let

- a be a sample from A , a uniform distribution over the range of $(0, 2)$
- b be a sample from B , a uniform distribution over the range of $(0, 3)$
- c be a sample from C , a uniform distribution over the range of $(0, 4)$

- 1) Determine the pdf for $a + b$ using moment generating functions (i.e. Laplace transforms)
- 2) Determine the pdf for $a + b$ using convolution (by hand or Matlab)
- 3) Assume each resistor has a tolerance of 5% (i.e. a uniform distribution over the range of $(0.95, 1.05)$) of the nominal value. Determine the mean and standard deviation for the voltage at $V4$ for the following circuit.



Exponential Distributions

Let

- d be a sample from D , an exponential distribution with a mean of 4
 - e be a sample from E , an exponential distribution with a mean of 10
 - f be a sample from F , an exponential distribution with a mean of 20
- 4) Use moment generating functions to determine the pdf for $X = d + e$
 - 5) Use moment generating functions to determine the pdf for $Y = d + e + f$