Problem Set 2
PHY670: Astro Statistics
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1. Consider the probability distribution:

$$p(x) = \exp\left(-|x|\right)$$

   What is the normalization constant for this distribution? Calculate the average, standard deviation, Skewness and Kurtosis for this distribution. If you have a random number generator for uniformly distributed random numbers in the range $0 \le y \le 1$ then how can you use these to generate random numbers for the PDF given above?

2. Consider the study of star spot coverage and age of stars by Araújo et al. Using the data given in Table 1 and Table 2 of the paper, reproduce figures 3 and 4 including the values for the Spearman correlation coefficient.

3. A data file containing education level and employment status for 2023 for Canada is given to you. Using the number of years of education in each case as a quantitative parameter to represent the education level, find the correlation coefficients and corresponding p values.