

In your own words, describe how we use probability distributions to decide if we'll conclude that something is probably true or there's not enough evidence to say it is true. (this should be hard to write, spend time on it and be sure you really understand what you write)

The k^{th} moment about the origin of a RV X (aka k^{th} moment), is given by

$$\mu'_k = E[X^k] = \sum_x x^k f(x) \text{ or } \int_{-\infty}^{\infty} x^k f(x) dx \text{ for } k = 0, 1, 2, \dots$$

In your own words, explain this formula in a way that connects the computation of the answer to an intuition of what the answer describes (do not repeat what you heard in class, use your own words).

In your own words, describe how/why the first and second moments are important in a probability distribution.