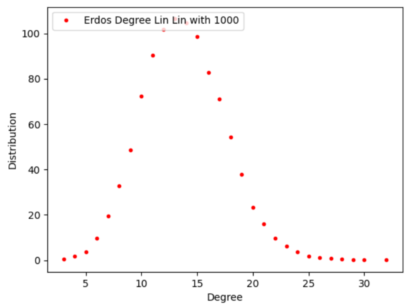
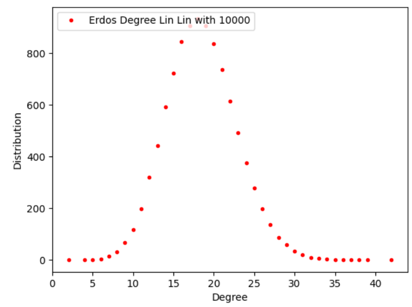
# Algorithmic Experiments of Real-World Phenomena

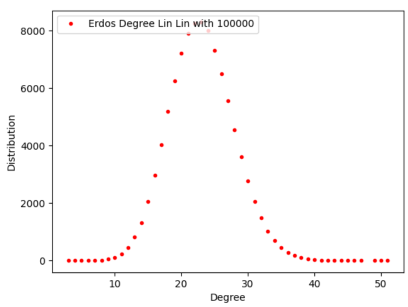
Andy Tran

## Erdos-Renyi Random Graphs

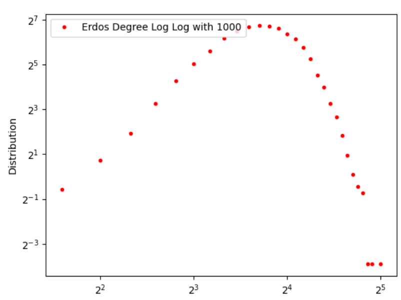
### Degree Distribution

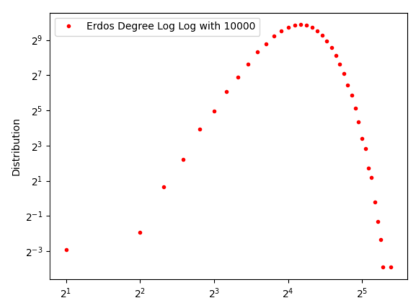


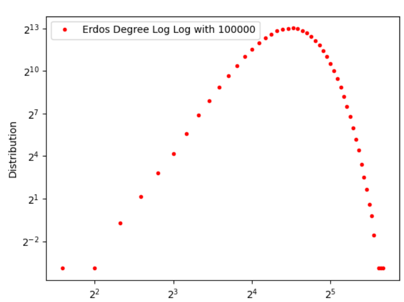




**When observing the degree distribution Lin-Lin graphs for Erdos-Renyi random graphs, the distributions do not follow a power law, but instead have a Poissonian distribution.**

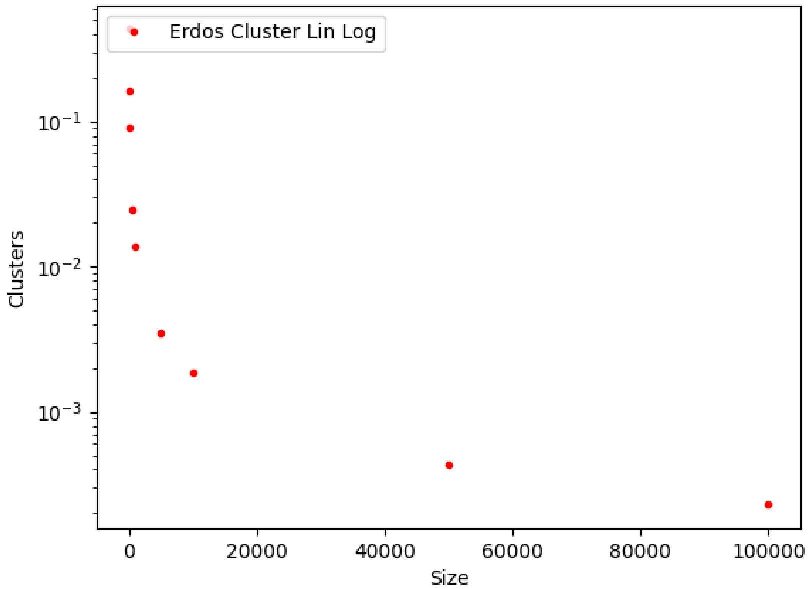


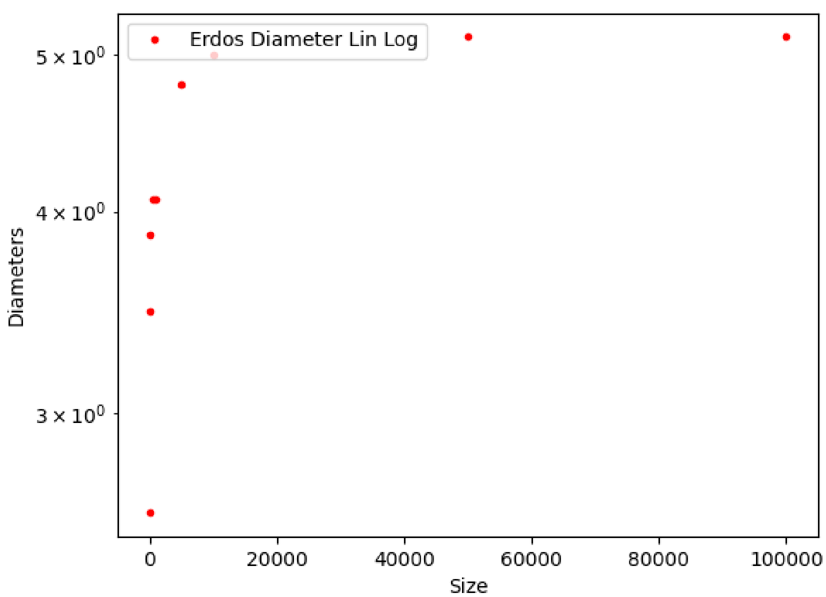

**When observing the degree distribution Log-Log graphs for Erdos-Renyi random graphs, the distributions do not follow a power law, but instead have a Poissonian distribution that is left skewed.**

**Clustering Coefficients**




**The Cluster Coefficient graph for Erdos-Renyi random graphs, does show the amount of clusters changing as a function of n. As the n goes towards infinity, the cluster coefficient gets closer to zero because the number of paths of length 2 gets increasingly greater than the number of triangles by a greater margin. This function is similar to the function of e with the power of negative x.**

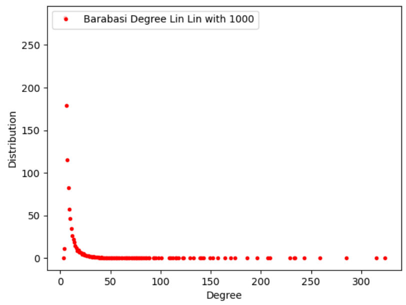
**Diameters**

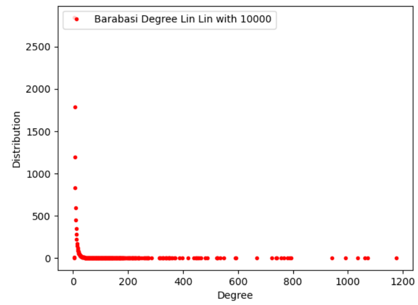


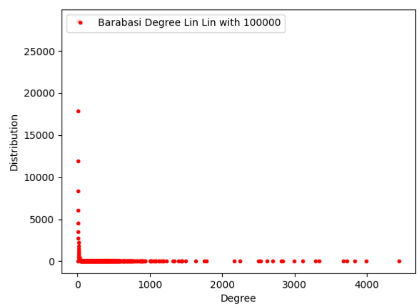

**The length of the Diameter for Erdos-Renyi random graphs, does show the diameter changing as a function of n, but as the n goes towards infinity, the diameter seems to hit a limit. This function is similar to a logarithmic function.**

# Barabasi-Albert Random Graphs

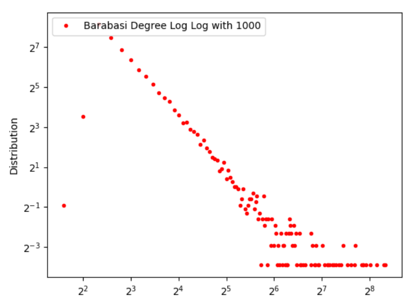
## Degree Distribution

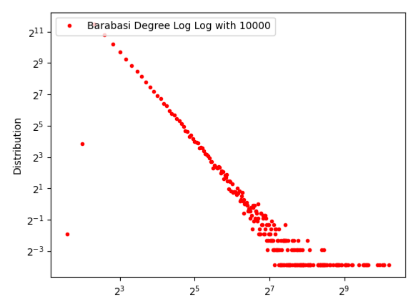


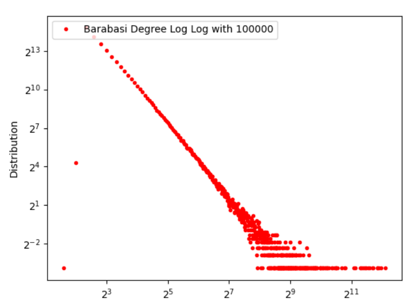




**When observing the degree distribution Lin-Lin graphs for Barabasi-Albert random graphs, the distributions does follow a power law.**

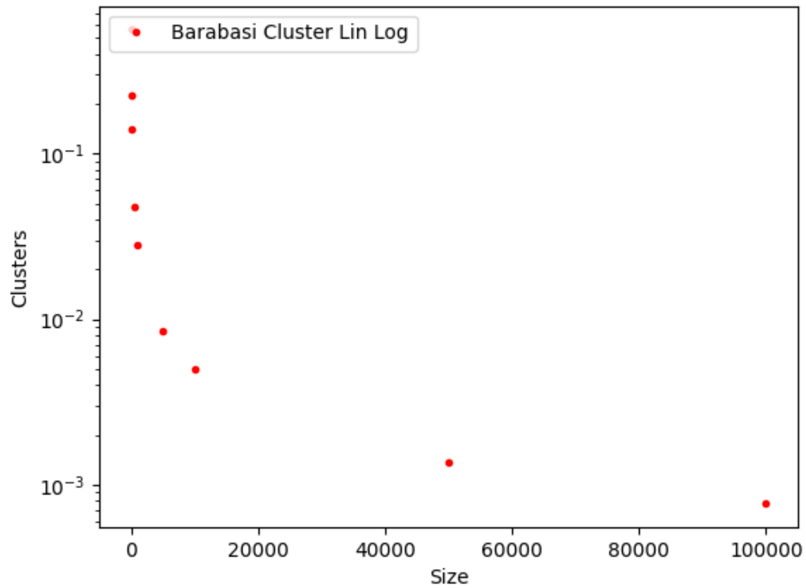


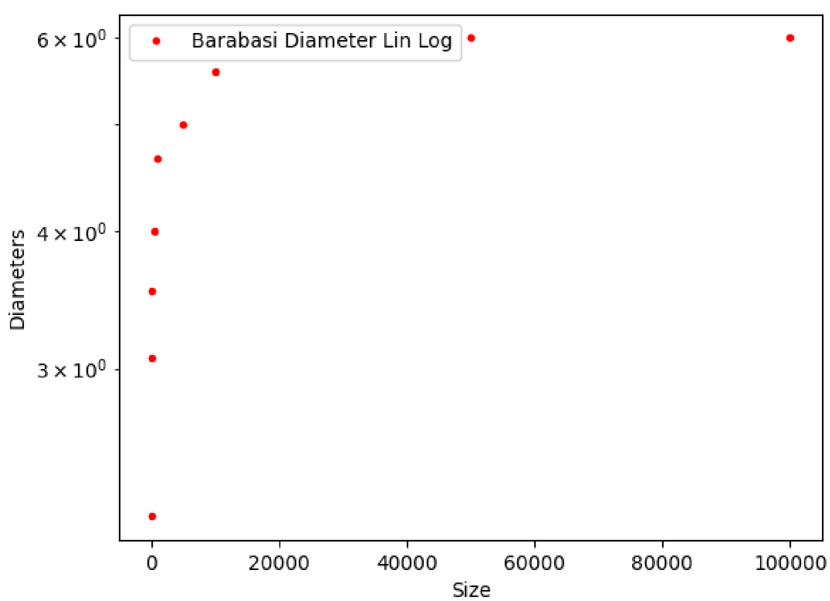

**When observing the degree distribution Log-Log graphs for Barabasi-Albert random graphs, the distributions does follow a power law.**

## Clustering Coefficients




**The Cluster Coefficient graph for Barabasi-Albert random graphs, does show the amount of clusters changing as a function of n. As the n goes towards infinity, the cluster coefficient gets closer to zero because the number of paths of length 2 gets increasingly greater than the number of triangles by a greater margin. This function is similar to the function of e with the power of negative x.**

**Diameters**




**The length of the Diameter for Barabasi-Albert random graphs, does show the diameter changing as a function of n, but as the n goes towards infinity, the diameter seems to hit a limit. This function is similar to a logarithmic function.**