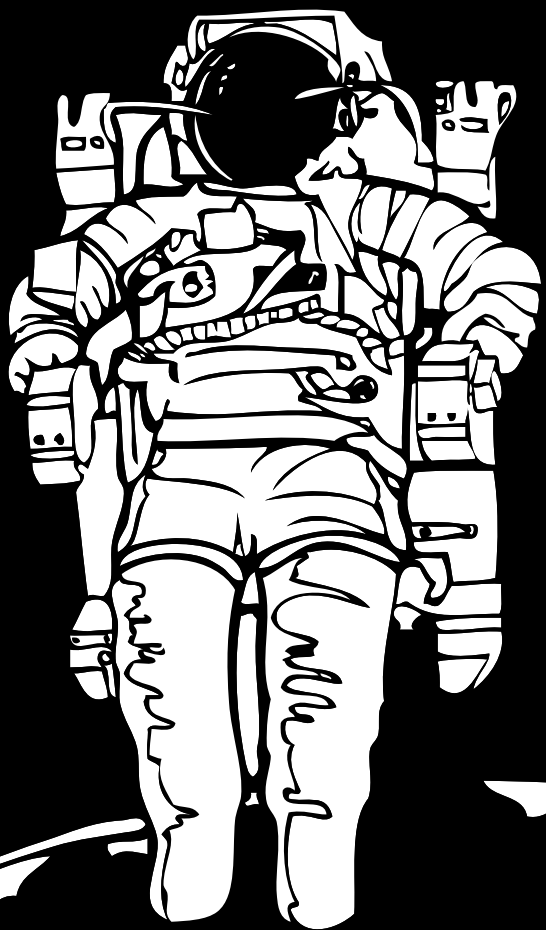




# ANALYZING ORBITAL PROPERTIES OF KOI SYSTEMS

Kaitlyn Le






# GOALS

Model the given data in the NASA Planetary Composite Database

Create best-fit lines to find if there are correlations between two orbital properties

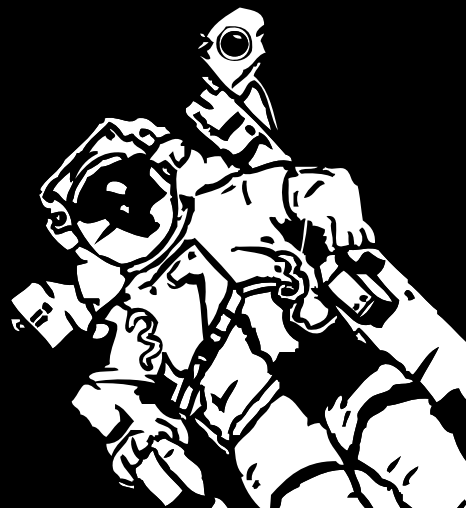
Find residuals of the best-fit lines



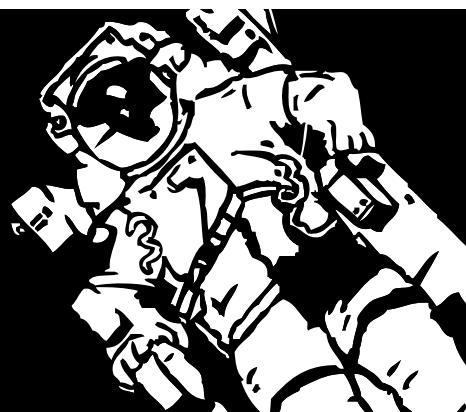
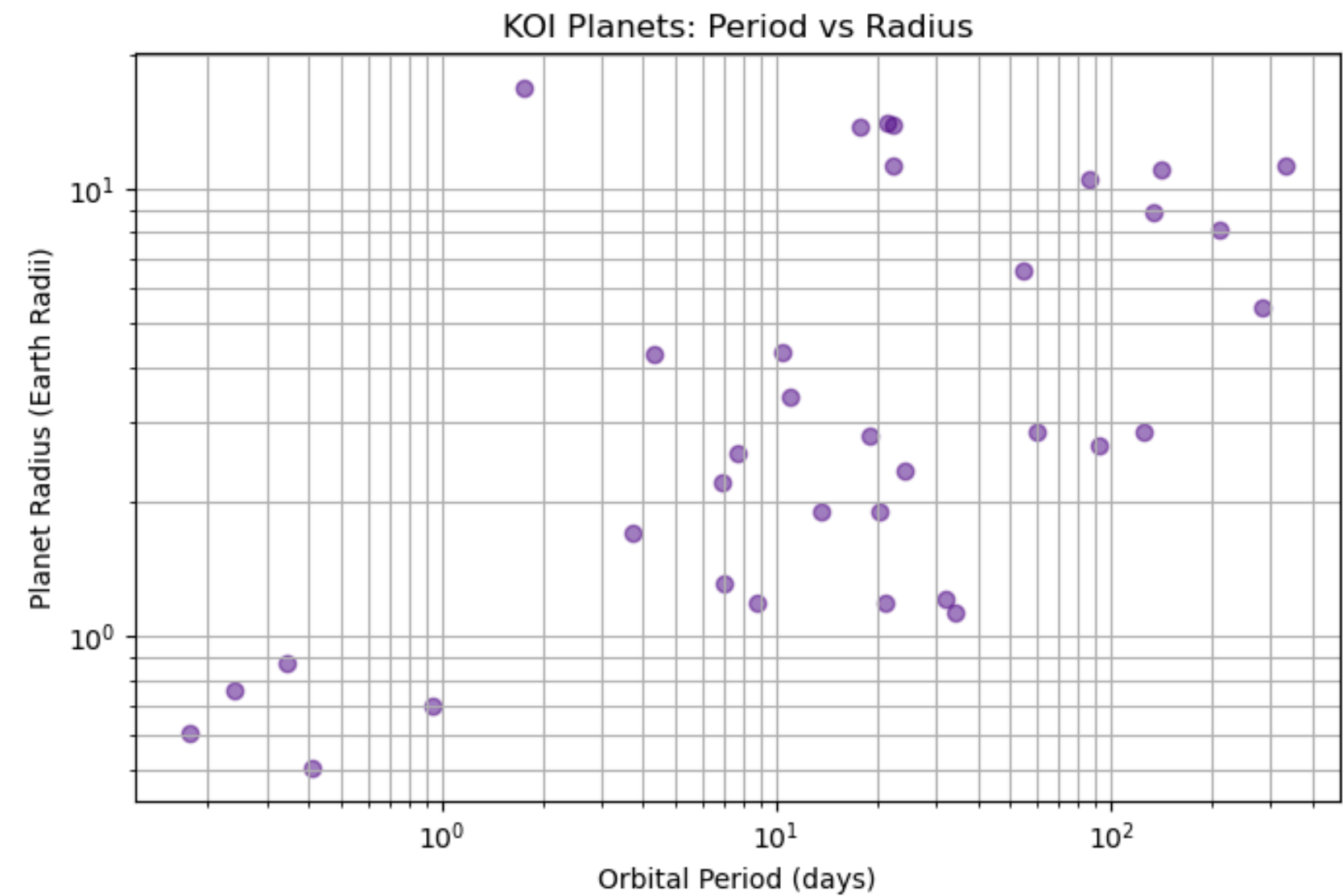
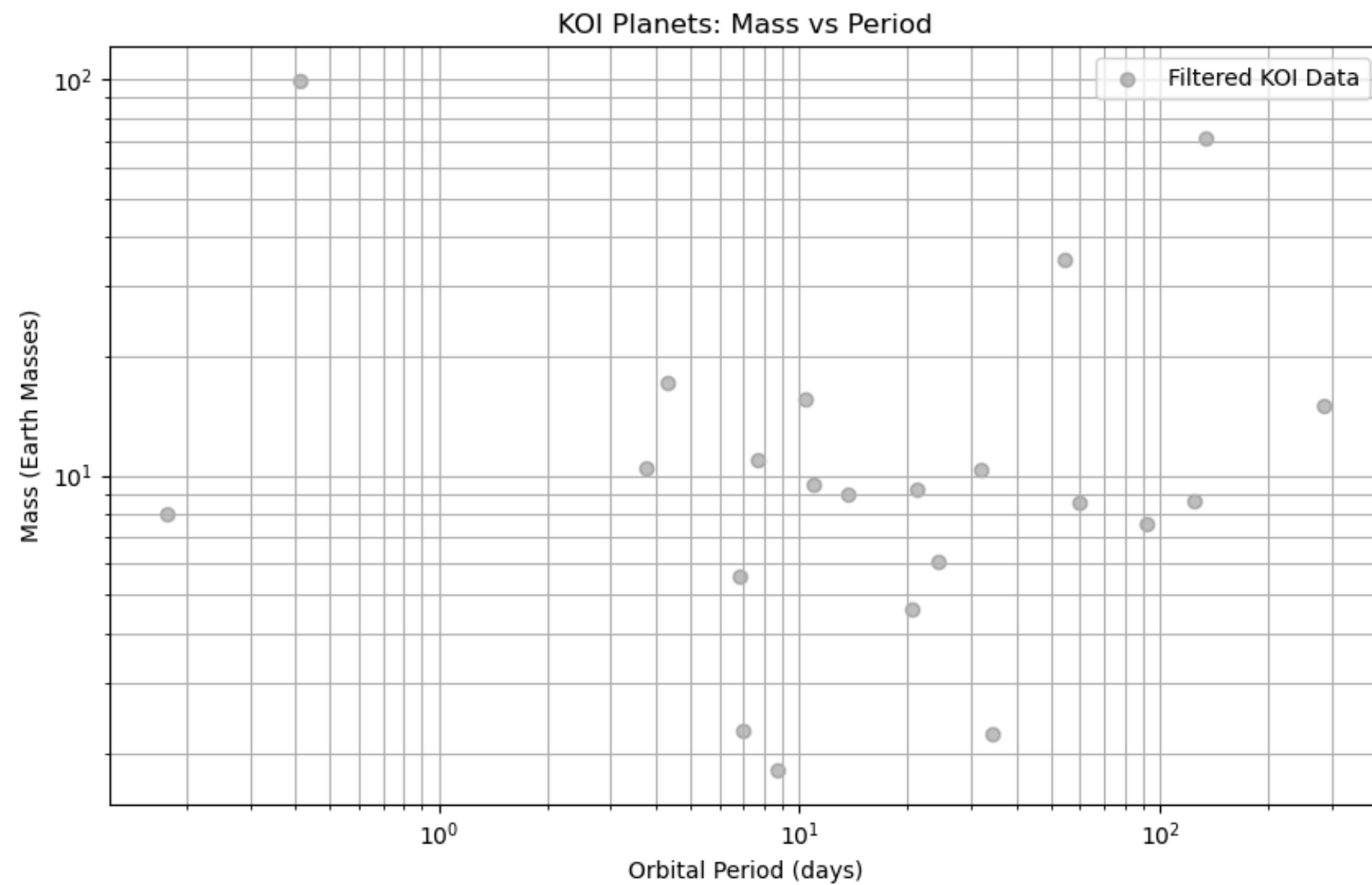


# METHODOLOGY

- Data used: NASA Planetary Composite Data (filtered to only take KOI system data)
- Power Law for Best Fit:  $y = CP^k$ 
  - assists in expressing empirical relationship between two variables
- For residuals: observed-predicted value
  - the predicted values are from the best-fit line while the observed values are from the data

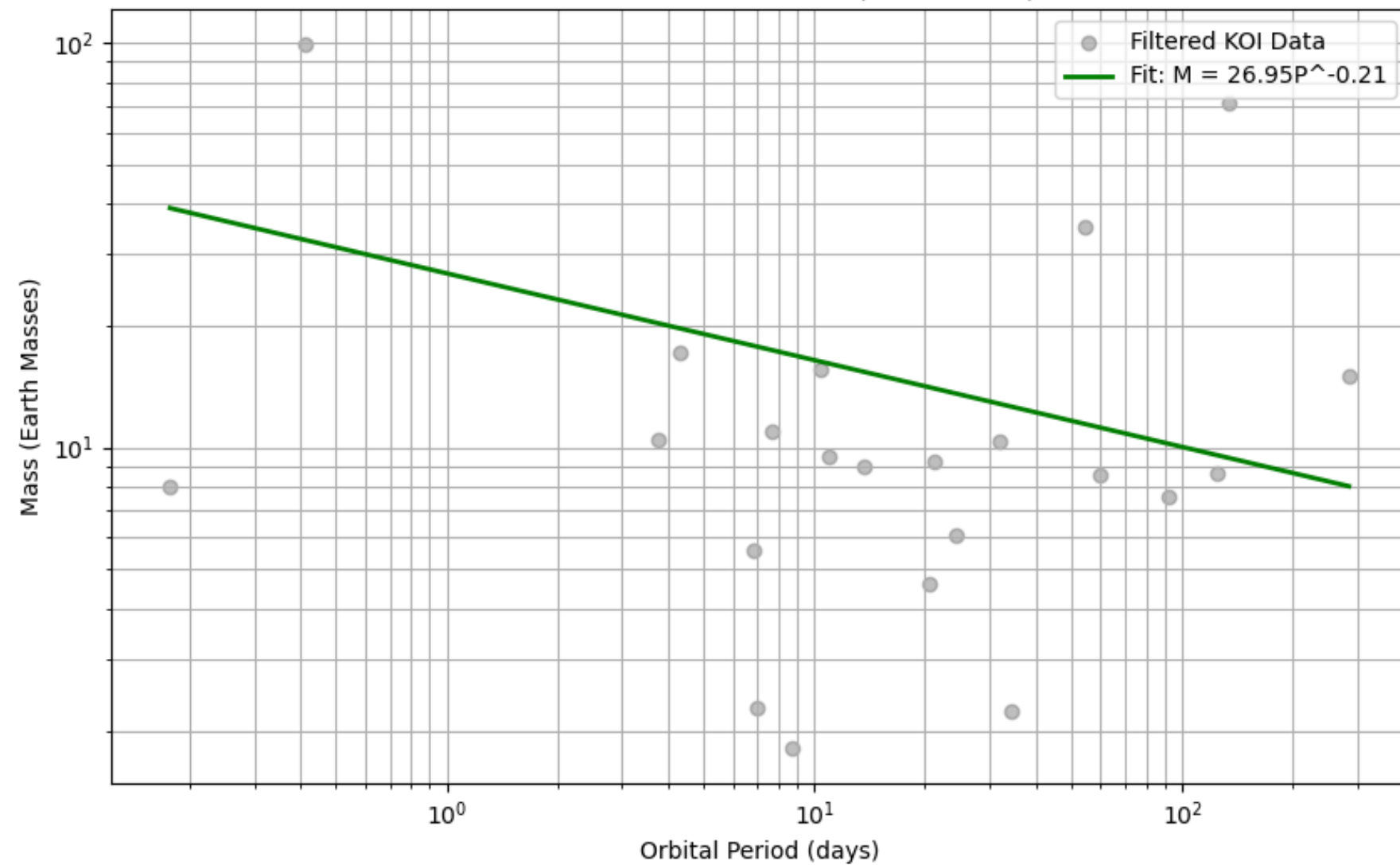


# MODELLING THE DATA

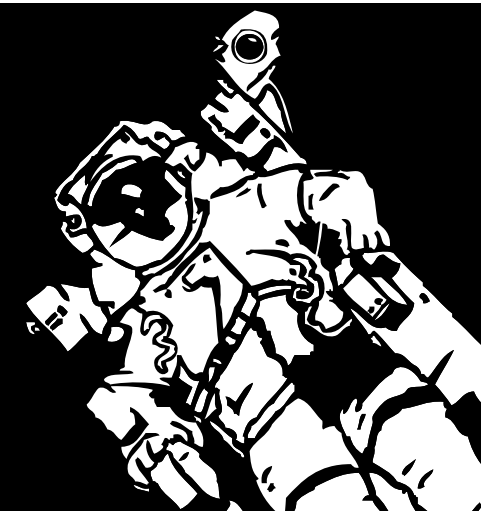
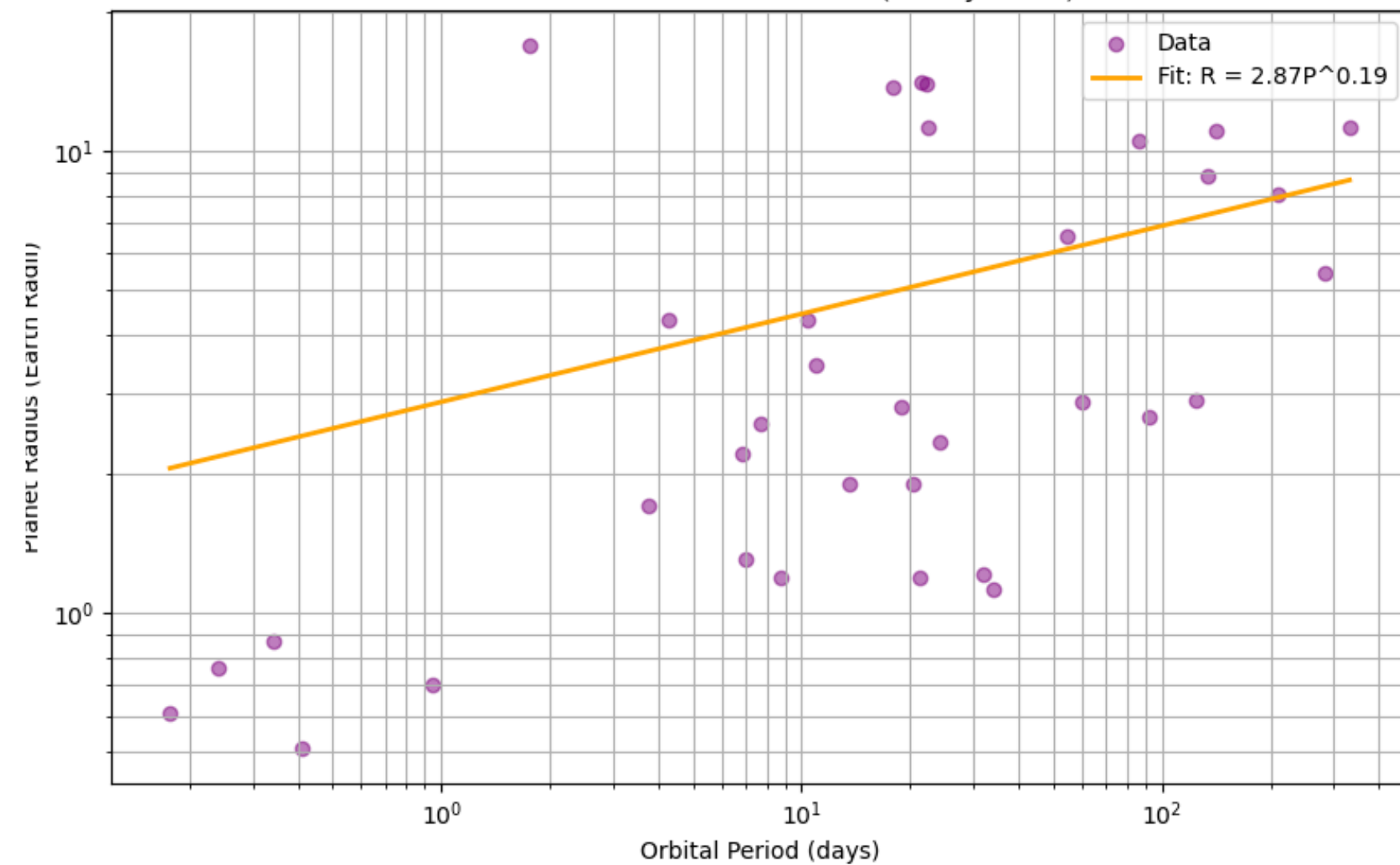


# BEST FIT LINES

Mass-Period Power Law Fit (KOI Filtered)

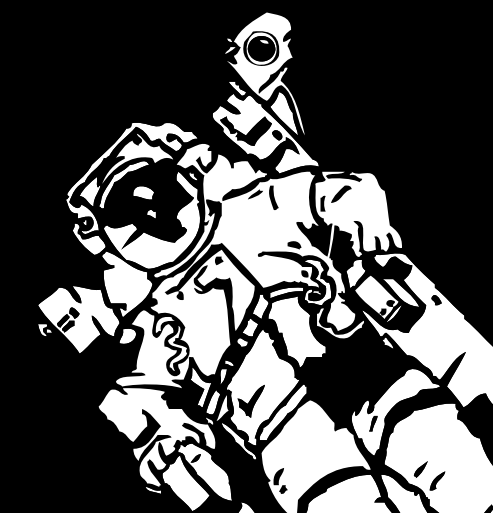
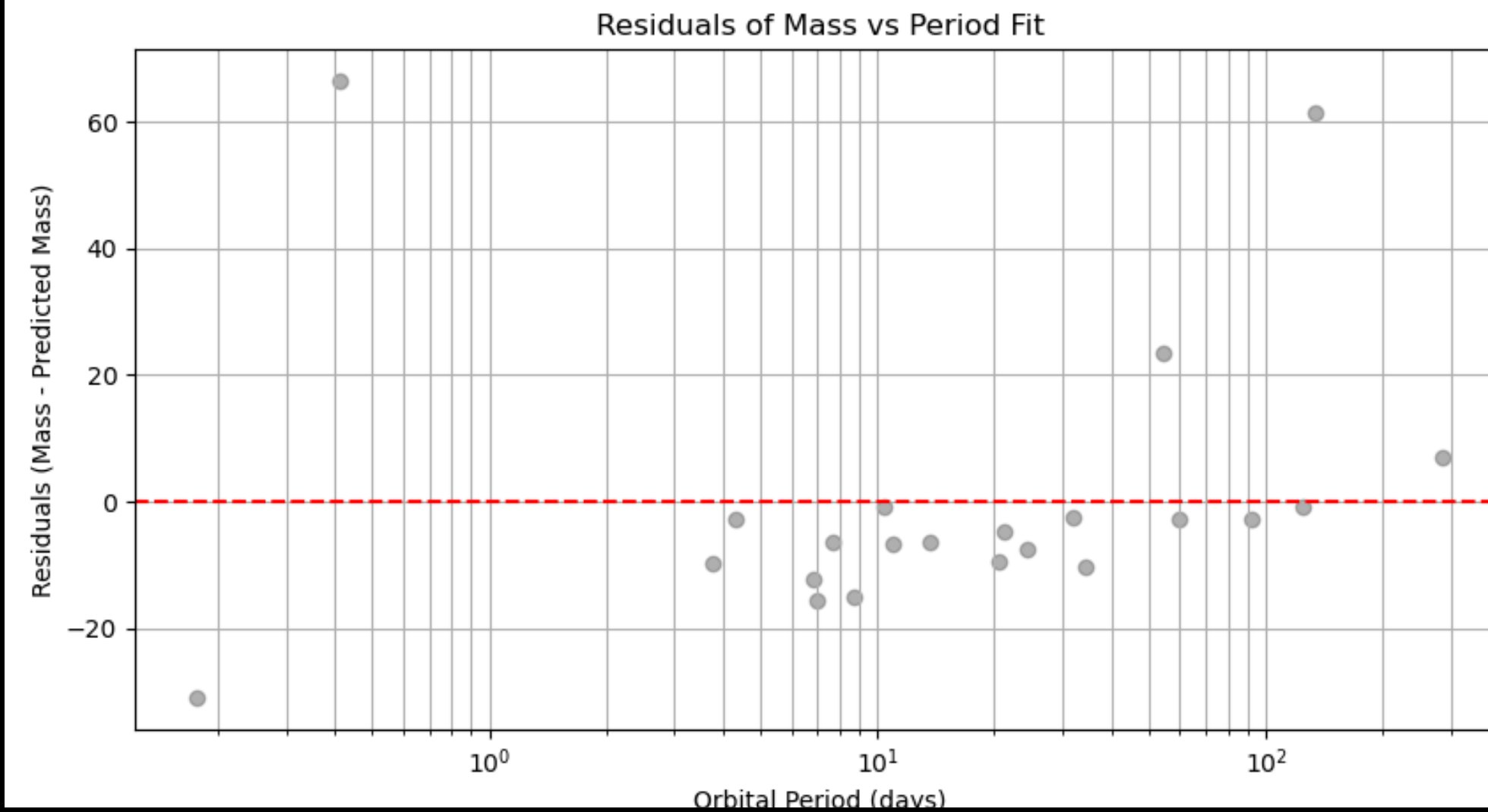
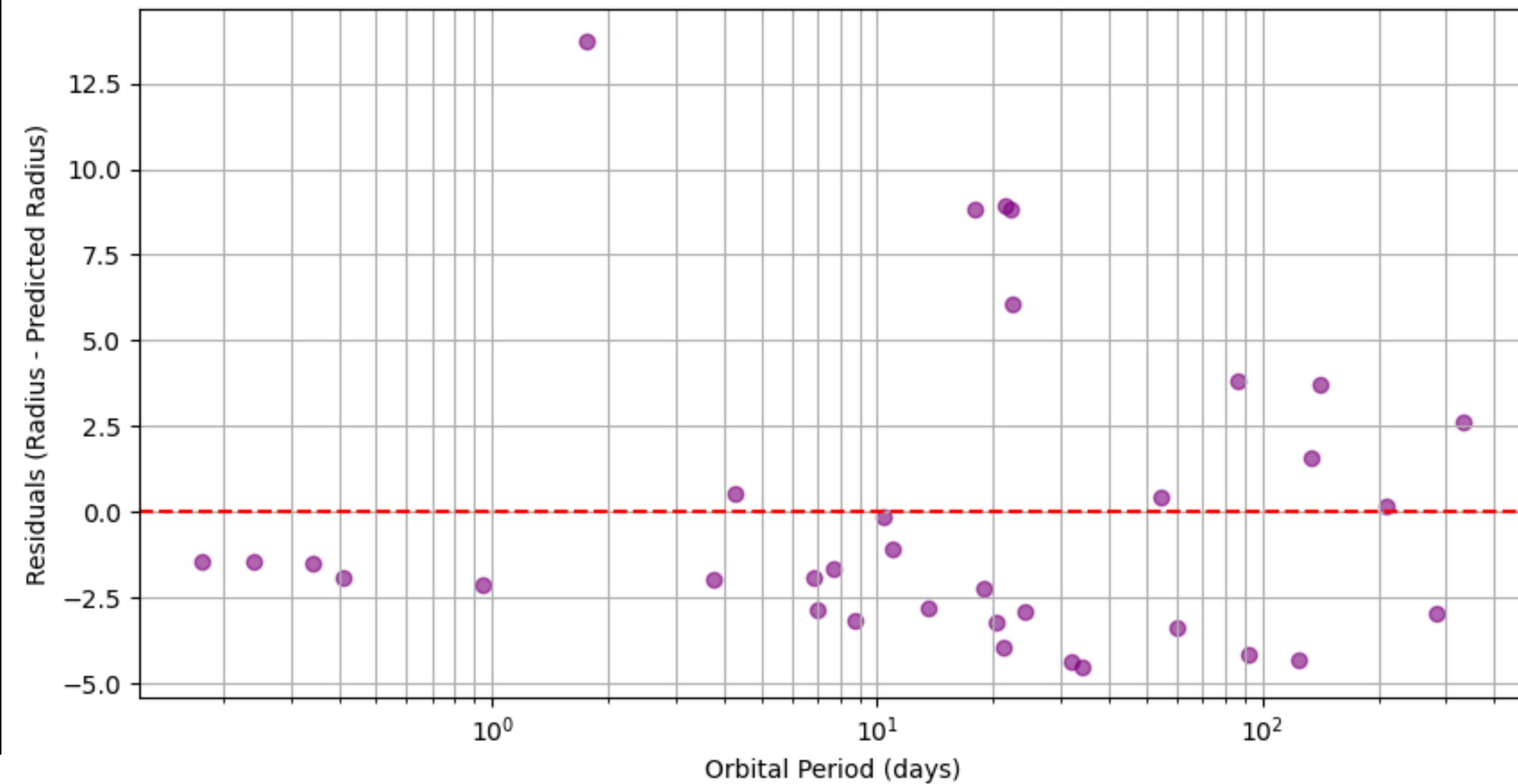


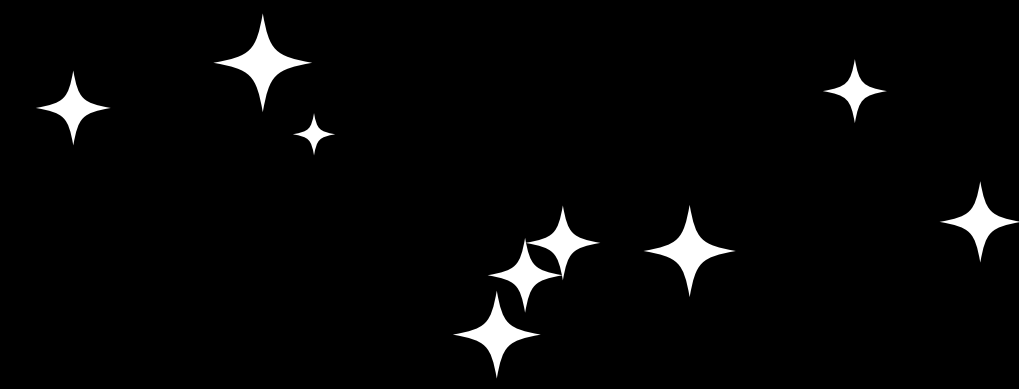
Period vs Radius Power Law Fit (KOI Systems)





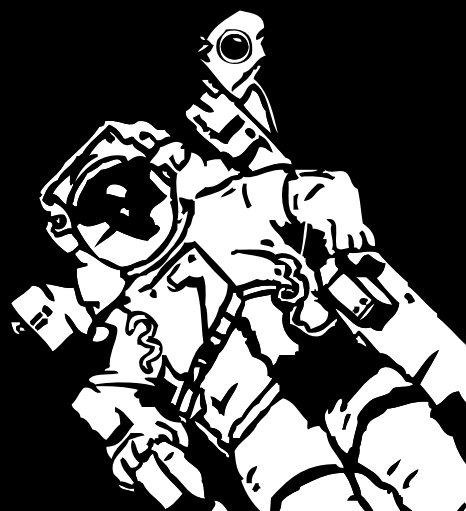
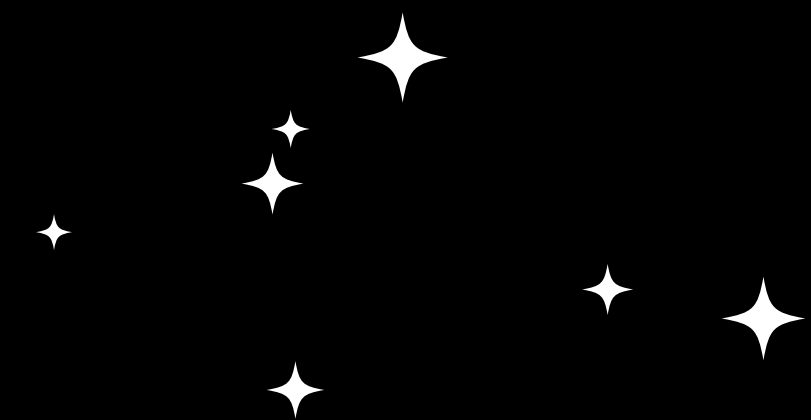
# RESIDUALS





# RESULTS

- For mass and period, there seems to be a somewhat inverse relationship as in the plot, when mass decreases, the orbital period seems to increase
- For radius and period, there is a somewhat direct relationship where orbital period increases as radius increases





THANK YOU

