Below we write the mathematical formulas we used to calculate various parameters of an exoplanet candidate with the name TIC-399665349 and it's mother star:

To calculate the radius of the planet Rp we used the formula:

$$Drop = r^2 / R^2$$

$(Rp/Rs)2=\Delta L/L$=drop of the luminocity of the mother star. The drop was calculated from the light curve: drop=0.00045 and Rs=1.37171Rsun,we have: Rp=0.02909Rsun

$$\frac{Luminosity_{Star}}{Luminosity_{Sun}} = \left(\frac{Mass_{Star}}{Mass_{Sun}}\right)^{3.5}$$

To calculate the mass of the mother star we used the equation from the HR diagram: $(L/Lsun)=(M/Msun) 3.5$, so for Lsun=1 and L=2.96,we calculated the mass of the mother star to be: M=1.36349 Msun

to calculate the average orbital radius we used the following formula in python:

$$a = \sqrt[3]{\frac{P2}{\frac{4\pi^2}{GM}}}$$

```
import math
P = 12.987 * 24 * 60 * 60
G = 6.674* 10 ** -11
M = 1.36349 * 1.98847 * 10**30
pi = math.pi
a = ((P**2)/((4*pi**2)/(G*M)))**(1/3)
print(a , 'm')
print(a/1000 , 'km')
print(a/1000 * 0.000000006684587, 'AU')

17936906486.953194 m
17936906.486953195 km
0.119900811922903 AU
```

Rs and Lwere obtained from here: https://www.universeguide.com/star/22449/tabit#related
Star info obtained from here: https://www.universeguide.com/star/22449/tabit#related
Reference guide obtained from here:
https://github.com/Simone-Dr/TIC-239332587-Exoplanet/blob/main/TIC-239332587-Exoplanet.ipynb