ASTR615 HW#4

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Problem 2

Mass distribution

We implement in all of our simulations the Kroupa IMF in the form:

$$\phi(m) \propto \begin{cases} m^{-1.3} & (0.08M_\odot < m < 0.5M_\odot) \\ 0.5\, m^{-2.3} & (0.5M_\odot < m < 100M_\odot) \end{cases} \tag{1}$$

after doing transformation we get

$$m = \begin{cases} -\dfrac{0.566179}{\sqrt[3]{1.7987 - x}\,(x^3 - 5.39611x^2 + 9.70599x - 5.81939)} & 0 < x < 0.760707 \\ \dfrac{0.166558}{(1.00024 - x)^{10/13}} & 0.760707 < x < 1 \end{cases} \tag{2}$$

Morphology

a