Assignment 4

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1 Question 1:

Collision freq of plasma is given by

$$\nu_c = \frac{Ne^4}{16 * \pi * \epsilon^2 * m^2 * v_{th}^3} \tag{1}$$

We get the collison frequency as 0.6 Thus we can consider plasma to be in steady state for time durations of order 10

2 Question 2:

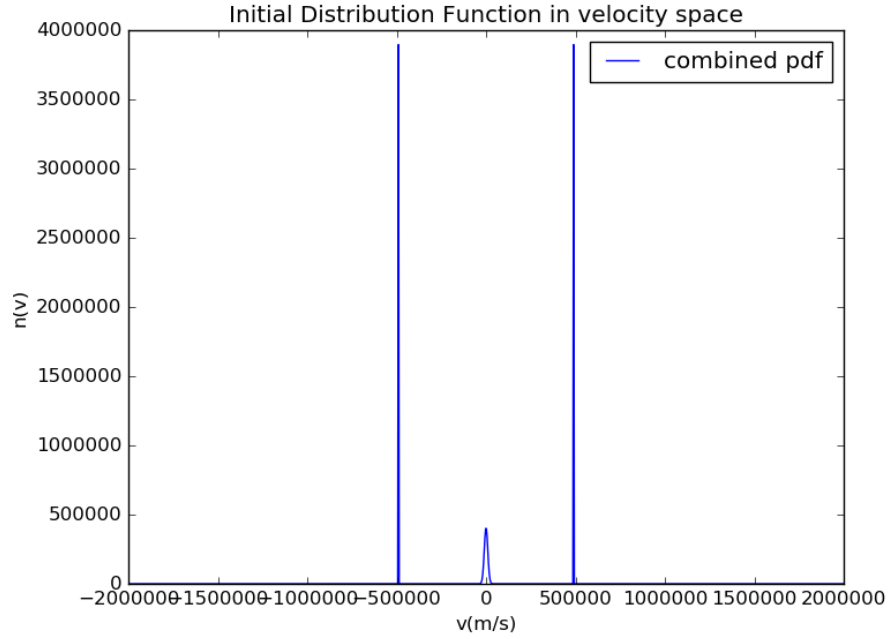Below is the combined velocity distribution plot

Figure 1: Initial distribution function

3 Question 3:

Combined density $= 3.00 * 10^{1}0$ Temperature $= 1667eV$

4 Question 4:
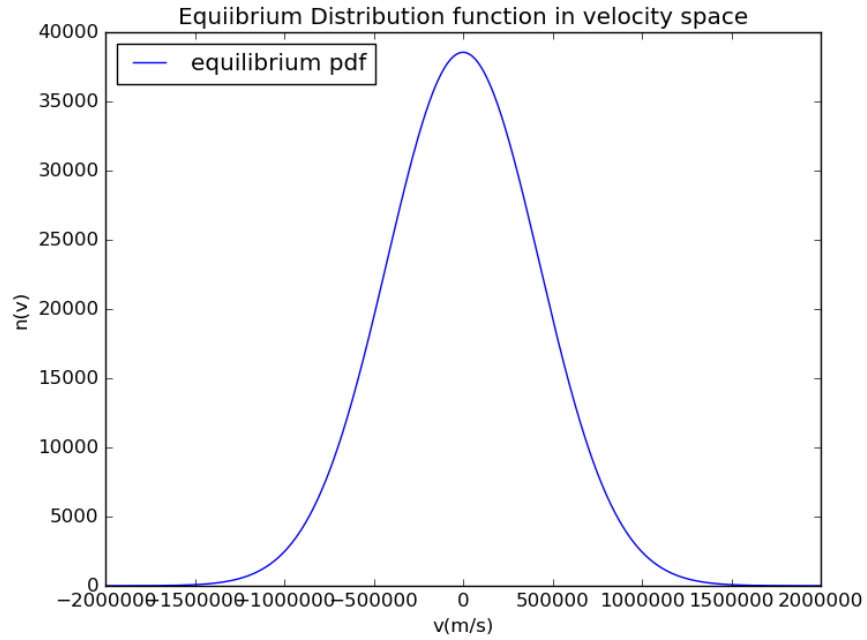
Equilibrium density function is plotted below

Figure 2: Equilibrium distribution function

5 Question 5:

(Refer code for simulation)
Time taken to reach within $1\% = 1567.21$s

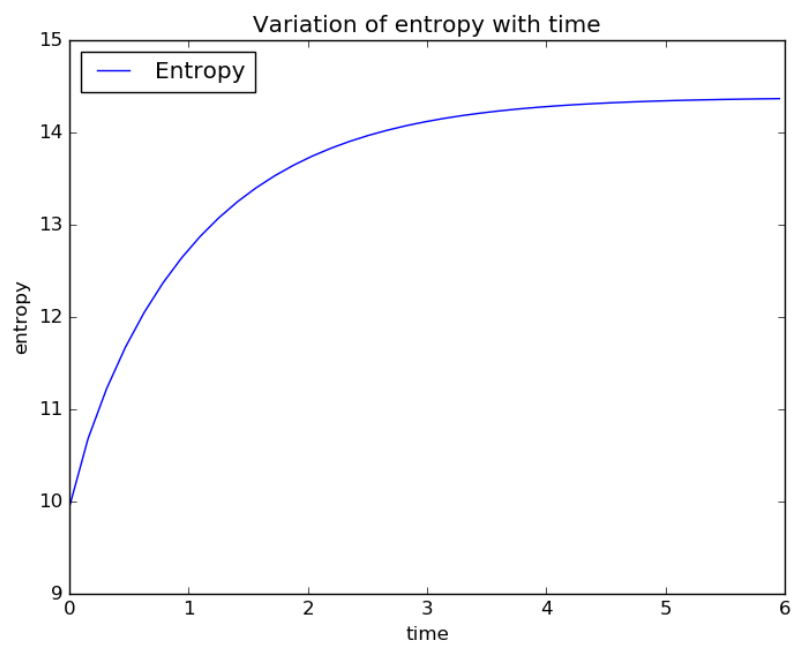# 6 Question 6:

Entropy increases with time.
The variation of entropy is plotted below

Figure 3: Variation of Entropy