$(n_H)_{min} = 0.0099$

$(pdf)_{min} = 1.74 \times 10^{-21}$

$(X_{H_2})_{min} = 1.462 \times 10^{-8}$

$(n_H)_{max} = 99 \times 10^5$

$(pdf)_{max} = 0.3673$

$(X_{H_2})_{max} = 0.5$

$(\bar{n}_H)_{min} = (n_H)_{min} * (pdf)_{min}$

$= 1.7226 \times 10^{-23}$

$(\bar{n}_H)_{max} = (n_H)_{max} * (pdf)_{max}$

$= 3.6363 \times 10^6$

$(\bar{n}_{H_2})_{min} = (\bar{n}_H)_{min} * (X_{H_2})_{min}$

$= 2.5184 \times 10^{-31}$

$(\bar{n}_{H_2})_{max} = (\bar{n}_H)_{max} * (X_{H_2})_{max}$

$= 1.8181 \times 10^6$

for loop : $k = 0$ to $k = (len(n_H) - 1)$

$d\bar{n}_H = \bar{n}_H[k] - \bar{n}_H[k-1]$

$tot\_\bar{n}_H[k] = (\bar{n}_H[k-1] + \bar{n}_H[k]) * d\bar{n}_H * 0.5$

$d\bar{n}_{H_2} = \bar{n}_{H_2}[k] - \bar{n}_{H_2}[k-1]$

$tot\_\bar{n}_{H_2}[k] = (\bar{n}_{H_2}[k-1] + \bar{n}_H[k]) * d\bar{n}_H * 0.5$

$\bar{X}_{H_2}[k] = tot\_\bar{n}_H[k] / tot\_\bar{n}_{H_2}[k]$

$(tot\_\bar{n}_H)_{min} = -2639.589$

$\log\{(tot\_\bar{n}_H)_{min}\} =$??

$(\bar{X}_{H_2})_{min} = -3471.929$

$(tot\_\bar{n}_H)_{max} = 2650.199$

$\log\{(tot\_\bar{n}_H)_{max}\} = 3.4232$

$(\bar{X}_{H_2})_{max} = 3.057 \times 10^{15}$