Astronomy 230 Fall 2005
Homework #9
Due in Class: Friday, Nov. 18

Note: This homework should be typed.

The Drake equation can be written as:

$$N = R_* \times f_p \times n_e \times f_l \times f_i \times f_c \times L \qquad \text{where}$$

N   Number of advanced civilizations that can contact us in our Galaxy today
R$_*$ Star formation rate in the Galaxy per year (stars/year)
f$_p$ Fraction of stars with planets (planetary systems/star)
n$_e$ Number of Earthlike planets per stellar system (Earthlike planet/planetary system)
f$_l$ Fraction of Earthlike planets with basic life forms (basic life/ Earthlike planet)
f$_i$ Fraction of intelligent life on planets with basic life forms (intelligent life form/basic life)
f$_c$ Fraction of intelligent life that can communicate (communication /intelligent life form)
L   Lifetime of alien civilizations that can communicate (years)

Write down the Drake equation and a personal estimate on the number of civilizations with which we can communicate today. For each term write 2-4 sentences. To get full credit you must address:

- At least 1 scientific reason you chose the value.
- Are there limits on the value? What are they?
- Do you think the number is well known?

Compare your new value for N to HW 1. How did it change? Do you feel better about your new estimate?