Homework 4   Due April 6 2017
Answers should be concise, but not terse (e.g. 1-3 sentences, not phrases)

1) Problem 4.2 in S+G – [In order to calculate M/L you need to know what L is. See table 4.2 (its not clear in the text)]

2) Problem 5.10

3) From the class notes discuss why study of the galaxies in the local group is important for our understanding of more distant galaxies- what can we learn about stars and their evolution and their IMF from the local group that is hard to learn about more distant objects.

4) Compare and contrast the 3 spirals in the Local group (MW, M31, M33) –e.g. what is different about their mass distributions, their star formation etc.

5) In Spirals what:
a) are the dynamics of their 2 major components (disk and bulge)?
b) is a distinguishing property of the halo ?

6) Prob 4.8 in S&G

7)
a) What does the term 'luminosity function' mean?
b) What is the general form of the luminosity function and what are its important parameters and what do they 'mean'.
c) How does the luminosity function of spirals and ellipticals differ?

8)
a) What is the general form of a galaxies surface brightness ?
b) what is the asymptotic form of this surface brightness law for spirals and ellipticals
c) what is the meaning of the term 'scale length'

9)
a) what is the 'spider diagram" and what does it tell us about galaxy inclination and velocity field?
b) What is the 'Tully Fisher' relation and what does it tell us about the relationship of light and mass in spirals?

10) What is meant by 'winding up' of spiral arms and what does this tell us about their origin and how long they live??