- 1. Both MW and M31 have the same total mass(2.06*10^12 M_Sun). Mass is completely dominated by dark matter which is at 1.97510^12 M_Sun and 1.92110^12 M_Sun for the Milky Way and Andromeda respectively.
 - MW also has a lower baryon fraction than M31 so that means that it has higher domination of dark matter
- 2. M31 has more stellar mass at (0.12+0.019)*10^12 M_Sun since it has higher halo and disk mass than the milky way which is at (0.075+0.01)*10^12 M_Sun, this means that M31 is more luminous since dark matter is 'dark' in nature and M31 has more bright stellar mass in the form of halo and disk mass.
- 3. They have roughly the same total mass, but MW has higher dark matter mass. Their ratio is
 - MW/M31= 1.975/1.921.It can be surprising while looking at the raw numbers but this might not be too surprising when considering that M31 is slightly younger than MW and younger galaxies tend to have lesser dark matter.
 - (https://skyandtelescope.org/astronomy-news/less-dark-matter-young-galaxies/.)
- 4. Baryon function for MW= 0.041
 - Baryon function for M31= 0.067
 - Baryon function for M33=0.046

We have far far higher dark matter in galaxies than the Intergalactic medium, since our baryon function translates to values between 4-7% which is less than half of 16% This might be because dark matter is overrepresented in galaxies compared to the intergalactic medium, which makes sense when we consider the fact that dark matter 'binds' the galaxy together and helps the stars from going rogue.