

Henry

## PROBLEM 1

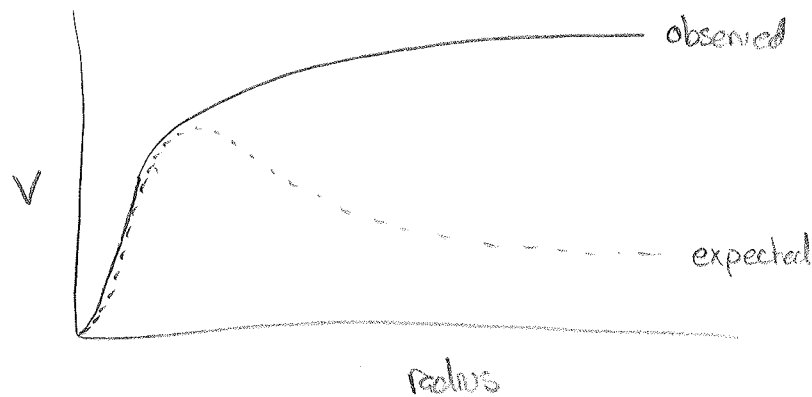
Briefly discuss the observational evidence for the following components of the Milky Way Galaxy. 1 point per question

1. dark matter
2. thin disk and thick disk
3. bulge
4. halo
5. cold ISM
6. hot ISM
7. magnetic field and cosmic rays
8. central black hole
9. population I and population II stars
10. accretion of dwarf galaxies

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## Astro #1

a) Dark Matter - evidence from galactic rotation curves



b) Thin + Thick disk - Differences in stellar populations at various scale heights w/in the disks of spiral galaxies. Differences includes: specific velocity, metallicity, stellar density, stellar age

c) Bulge - Seen in COBE infrared maps of galaxy

d) Halo - Distribution of globular clusters and field stars w/ high specific velocities suggests there is a halo of stars spherically surrounding the galaxy. We also know that there must be a dark matter halo to explain the motions of stars outside of the solar radius  $R_0$  w/in the galaxy

e) Cold ISM -