

# Observational Astronomy - Spring 2014

## Homework 9 - Galaxies

1. Why are elliptical galaxies much redder than spiral galaxies?
2. Why can we not see the center of our galaxy in visible light? What kinds of telescopes are used to image the stars at the center of our galaxy?
3. The Andromeda Galaxy will collide with our galaxy in about 4 billion years. Will this make life in our galaxy impossible?
4. How do we know there is a Super Massive Black Hole (SMBH) in the center of our galaxy? How massive is it? How do we know its mass?
5. What is an H-II region? What causes the pink glow that we see?
6. The sun is about 8 kpc from the center of the Milky Way galaxy. Assuming the mass of the Milky Way galaxy is about  $10^{11}$  times the mass of the sun, estimate about how long it takes the sun to orbit the center of the galaxy. Give your answer in millions of years. This is just a rough estimate, but gives an idea of the time frame.