

# Problem Set 1

## Biophysical Principles

Due: Jan 29, 2019

1. Assuming that stars are randomly distributed in the galaxy with a density  $\alpha$ , show that the probability of finding the nearest star at a distance  $R$  is  $p(R) = 4\pi R^2 \alpha \exp\left(-\frac{4\pi}{3}\right)$ .

Hint: you will need to calculate

- the probability of finding one star at a distance  $R$ .
- the probability of finding zero stars in the volume enclosed by a sphere of radius  $R$ .