2. The area of the plate is $\pi$ square units, hence the mass is finite, but $\lim_{n \to \infty} \ln \left( 1 + x^2 \right)$ does not exist so there is no center of mass.

3. (a) $\bar{y} = 0; \bar{x} = \frac{9}{16}$
   (b) $\bar{y} = 0; \bar{x} \approx 0.7095$

4. $\bar{x} \approx 0.93313$