1. Assigned: 180130, points: 1, solved by: Zachary Zhao on: 180205
   Let $A = \{x \ : \ 0 \leq x \leq 1\}$, and $B = \{x \ : \ 0 < x < 1\}$. True or False? There is a bijection between A and B.

2. Assigned: 180130, points: 1, solved by: Lyranne Leoni on: 180201
   Let $A = \mathbf{R}$, and $B = \{x \ : \ 0 < x < 1\}$. True or False? There is a bijection between A and B.

3. Assigned: 180201, points: 1, solved by: on:
   Let T be a triangle. True or False? There is a family of segments I_α so that
   $$\bigcup I_\alpha = T, \text{ and } I_\alpha \bigcap I_\beta = \emptyset \text{ if } \alpha \neq \beta.$$

4. Assigned: 180213, points: 1, solved by: on:
   True or False? If $n \in \mathbf{N}$, then $\sqrt{n}$ is either integer, or irrational.

5. Assigned: 180215, points: 1, solved by: on:
   geometric mean$\leq$arithmetic mean

6. Assigned: 180222, points: 1, solved by: on:
   A rabbit is hoping with an irrational step size α over a unit circle. A trap (interval) of length $\beta > 0$ is waiting for him. Show that the rabbit will be caught in the trap.

7. Assigned: 180413, points: 2, solved by: on:
   True or False? $\sin n$ is dense in $[-1, -1]$.

8. Suggested by: Jeff Coleman, Assigned: 180503, points: 2, solved by: on:
   Let $\{x_n\}$ be a sequence of positive real numbers such that $\lim_{n\to\infty} x_n = 1$. True or False? $\left\{x_n^{\frac{1}{n}}\right\}$ converges.