1. Quick Review
   (a) R is an equivalence relation on $\mathbb{R}$ defined as xRy if $\sin(x) = \sin(y)$. Describe and/or draw its equivalence classes.

   (b) We say S is a partition of the set A if

2. Theorem 11.1: Suppose R is an equivalence relation on the set A. For every $a, b \in A$, $[a] = [b]$ if and only if aRb.

3. Theorem 11.2: Suppose R is an equivalence relation on the set A. The set $S = \{[a] : a \in A\}$ is a partition of A.

4. Definition: The **integers modulo** n, denoted $\mathbb{Z}_n$, is the set $\{[0],[1],\cdots,[n-1]\}$ of equivalences classes of $\mathbb{Z}$ modulo n.
Try performing arithmetic in $\mathbb{Z}_{10}$. Does it depend on the representative of the equivalence class?

   (a) $[0]+[6]=$ (d) $[3]-[7]=$ (g) $[4]\cdot[5]=$

   (b) $[2]+[3]=$ (e) $[6]\cdot[1]=$ (h) $[3]\div[7]=$

   (c) $[9]+[5]=$ (f) $[3]\cdot[7]=$ (i) $[3]\div[4]=$

5. What do you **think** should be the definition of a relation R from the set A to the set B?

6. Think up a relation R from $A=\{a,b\}$ to $B=\{1,2,3\}$. How many distinct relations from A to B are possible?

7. How many relations R from A to B are functions? (This is require you to decide what you think should be the definition of a **function** from A to B...)

8. Think up a relation S from $C=\{a,b,c\}$ to $D=\{1,2,3,4,5\}$ that is a function. Determine the domain and range of S.

9. In the context of relations that are functions where we already have ideas about the words **domain** and **range**, what might the term **codomain** mean?