1. Let R be a set of actions, where $a \times b$ means "first do b, then do a" and "$a + b$ means "choose between doing a and b. In the literature, this is called either a "process algebra" or an "action algebra."

   (a) Give an example to show that distributivity fails.

   (b) What is the multiplicative identity element?

   (c) Is there an additive identity element? If so, what is it? If not, why not.

2. Show that the set of continuous functions from the reals to the reals is a ring, where $+$ is pointwise addition and $\times$ is composition.