

# Math Review Part II

## Problem Set 3: Correspondences

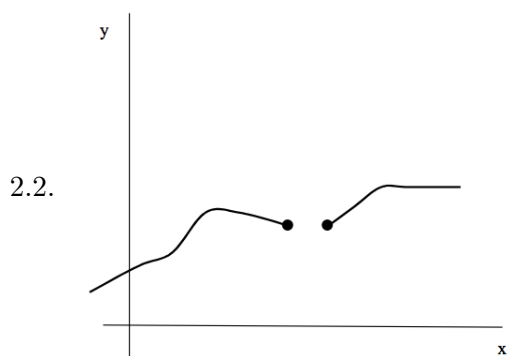
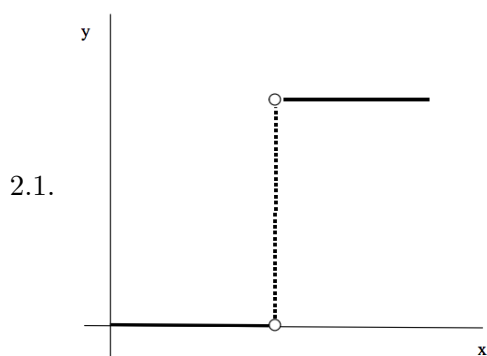
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1. Prove the following statement:

Let  $(X, d_X)$  and  $(Y, d_Y)$  be metric spaces. Consider a single-valued correspondence  $F : X \Rightarrow Y$ . Define  $f : X \rightarrow Y$  as  $f(x) = y$  s.t.  $y \in F(x)$ . Then  $F$  is uhc and lhc at  $x_0 \in X$  iff  $f$  is continuous at  $x_0$ .

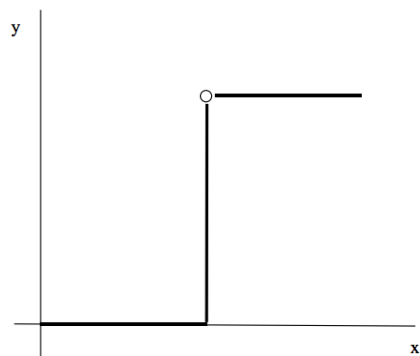
2. For each of the correspondences drawn below, answer if the correspondence is upper-hemicontinuous, lower-hemicontinuous or both.



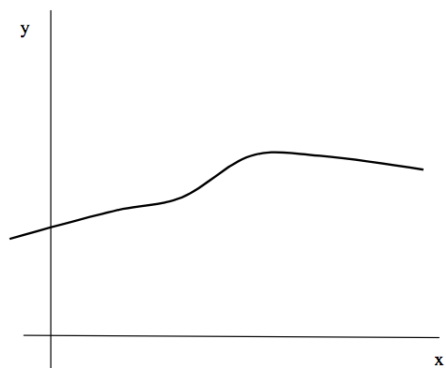

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2.3.



2.4.



2.5.

