

### 18.905 Problem Set 1

Due Wednesday, September 13 in class

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1. Prove that a CW complex  $X$  is a disjoint union of connected components, and these connected components are also path components.
2. Suppose that  $f : K \rightarrow X$  is a map from a compact space  $K$  to a CW complex  $X$ . Show that the image  $f(K)$  intersects the interior of only finitely many cells of  $X$ . (Hint: Suppose that you have a sequence of points in  $X$  that each lie in the interiors of different cells.) You can assume that  $K$  is first countable and Hausdorff if you want.
3. Hatcher, exercise 11 on page 19.
4. Hatcher, exercise 14 on page 19.