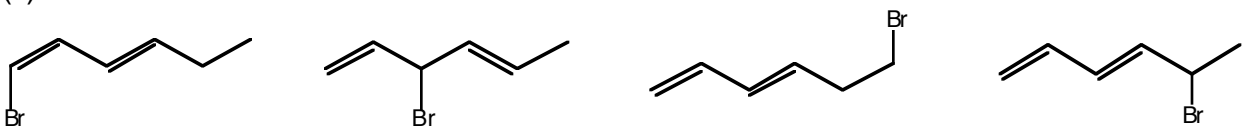
Problem 54, Chemistry 301X - 2006

Consider the reactions of compounds **1**, **2**, **3**, and **4** in water.

(a) Two of them react to give exactly the same mixture of three alcohols.

(b) One of them reacts slowly to give a different alcohol.

(c) One of them doesn't react at all.



1 **2** **3** **4**

First, explain items (a), (b), and (c). Be sure to draw the structures for all the alcohols formed in parts (a) and (b).

Second, use a HOMO-LUMO argument - not resonance forms - to show why those three alcohols in part (a) must be formed, but no others.