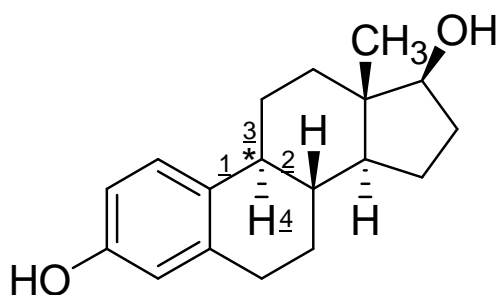
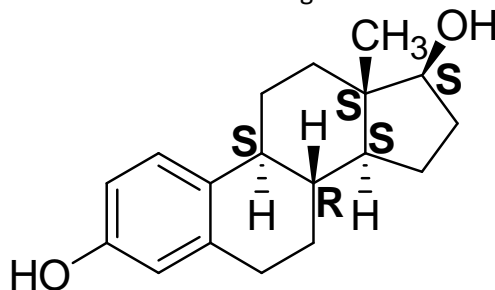
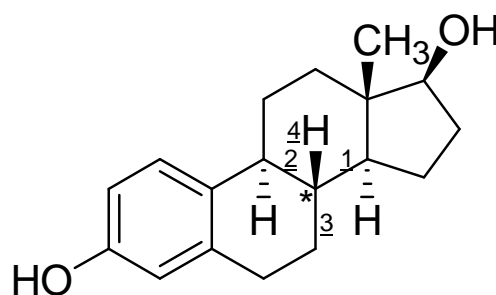


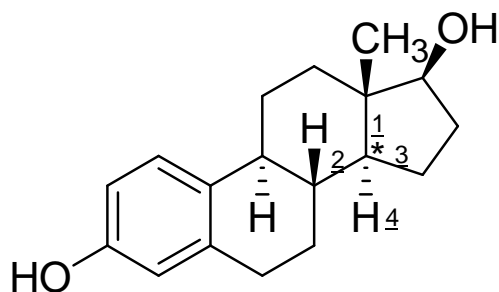
1) In this structure, identify the chiral centers with asterisks. Designate each center as R or S.



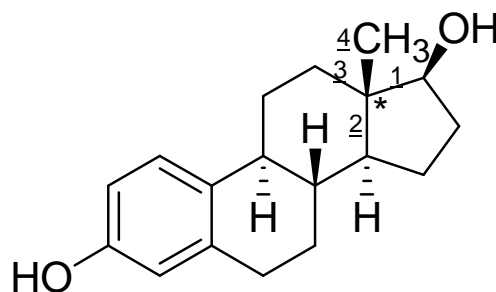
With 4 in back, counterclockwise = S



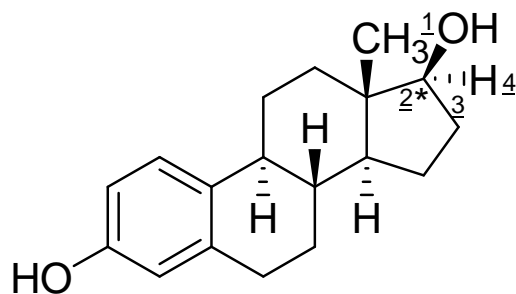
With 4 in front, counterclockwise = R



With 4 in back, counterclockwise = S

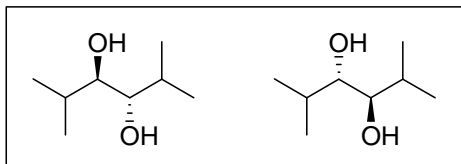


With 4 in front, clockwise = S

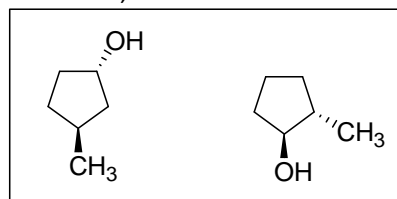


With 4 in back, counterclockwise = S

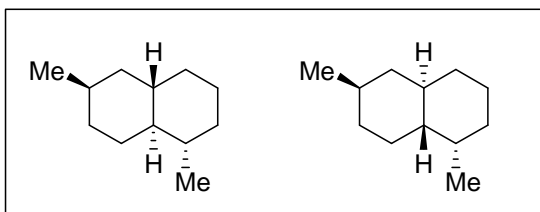
2) Are these pairs of molecules identical, enantiomers, diastereomers, or not stereoisomers at all?



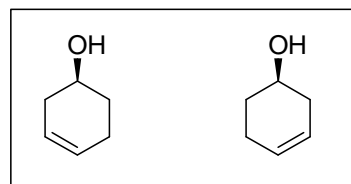
Identical - these are two drawings of the same meso molecule.



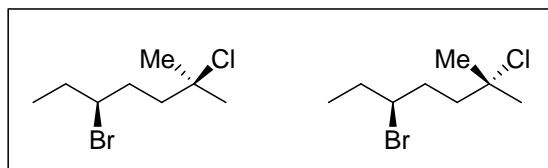
Not stereoisomers - the connectivity is different.



2 chiral carbons are changed and 2 are the same (and there's no way to rotate the molecule so they take each others' places), so **diastereomers**.



Enantiomers, since the one chiral carbon has two of its groups swapped.



Identical...this molecule only has 1 asymmetric carbon, since Me is the same group as the carbon at the right end of the chain.