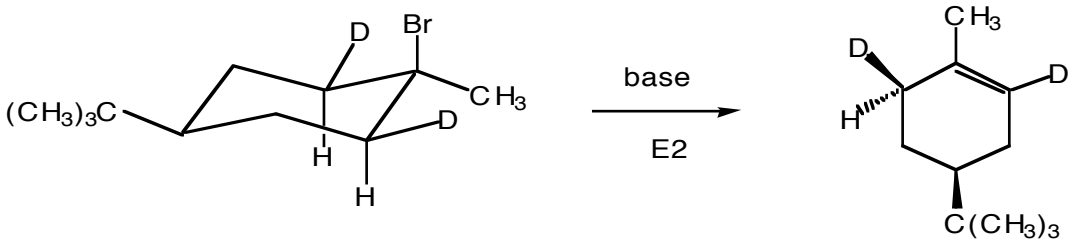
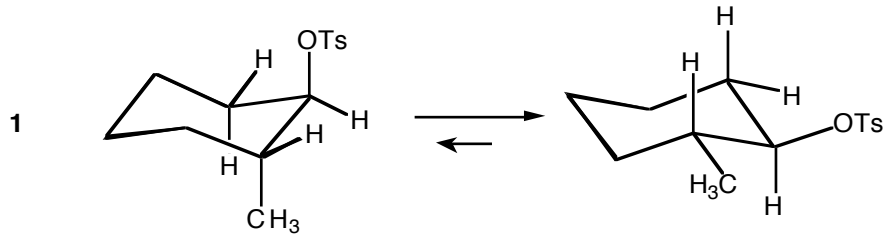
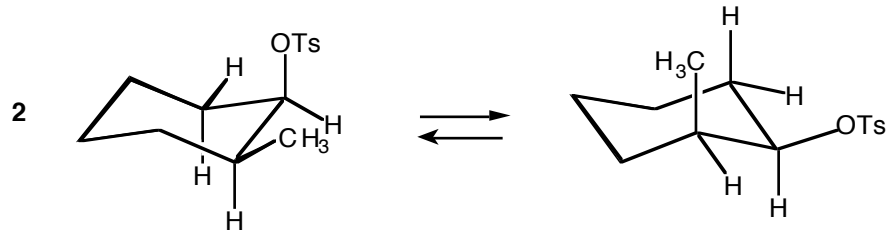
Answers to Problem 62, Chemistry 301X - 2006

First, make a good three-dimensional drawing, keeping the large *tert*-butyl group equatorial. Only the hydrogens (not the deuteriums) are in position to take part in a 180° anti E2 reaction, thus leaving two deuteriums still in the molecule.



The two compounds must share cis and trans structures. There is no way to do this problem without making good, three-dimensional drawings of the compounds. Here they are in both possible chair forms:





Only the hydrogens labelled with the arrows are in position to do a perfect, 180° anti elimination, and so the compound assigned as **1** gives only the single product shown, whereas **2** gives two products.