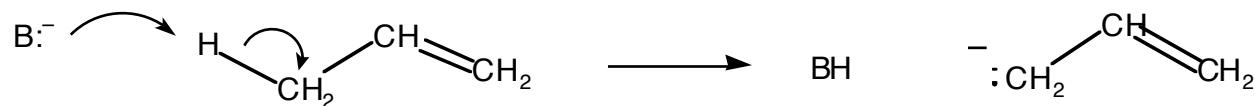


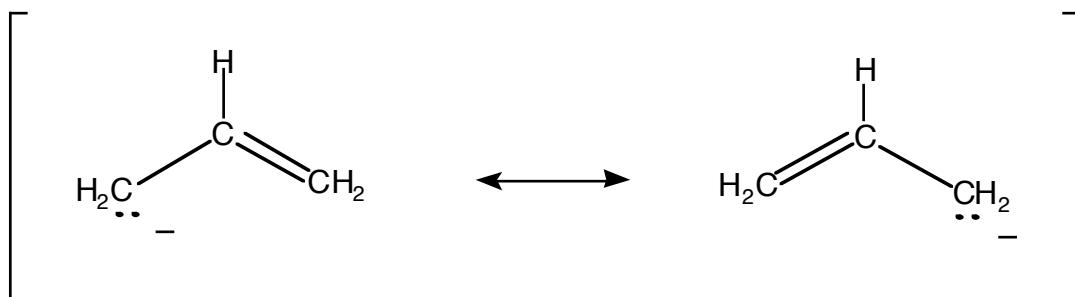
Answers to Problem 34, Chemistry 301X - 2006

$$pK_a \sim 38$$

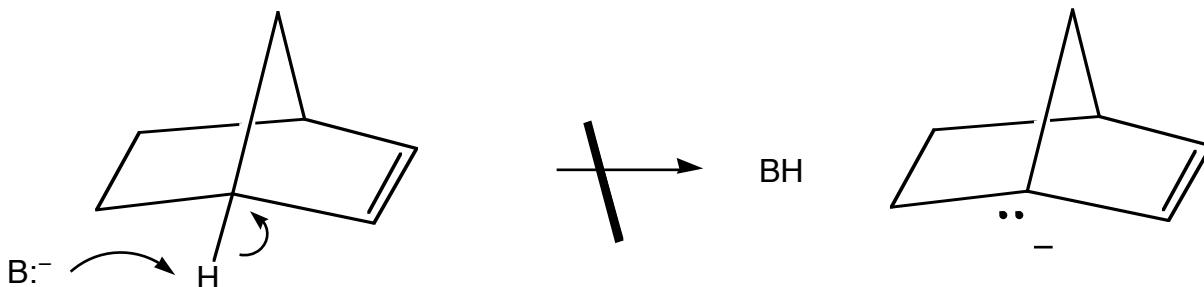


Why is it possible to deprotonate propene?

The resulting anion, and the transition state leading to it, will be stabilized by resonance. Delocalization of charge is a gigantic stabilizing effect.



Now look at a modified propene in X. Once again, the molecule cannot be deprotonated by any base. Why not?



The apparent resonance stabilization of the product anion is an illusion. As the orbitals of the π system and at the bridgehead of the bicyclic system are nearly perpendicular (see Bredt's rule, p.121-122) they do not overlap, and there is no resonance. Thus this "allylic" proton is just as hard to remove as the one in propane.

