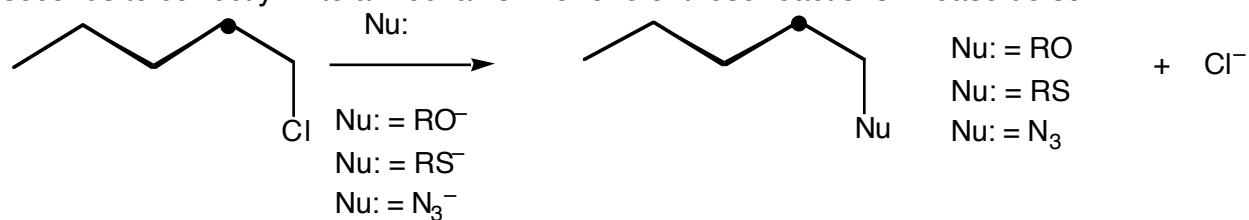
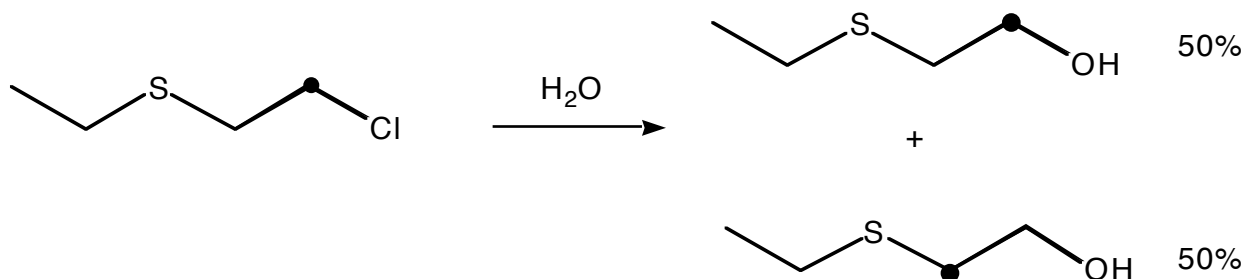


Problem 68, Chemistry 301X - 2006

Treatment of labeled pentyl chloride with a variety of nucleophiles such as  $\text{RO}^-$ ,  $\text{RS}^-$ , or  $\text{N}_3^-$  leads to straightforward formation of the products shown. It should take you about 10 seconds to correctly write a mechanism for one of these reactions. Please do so.



However, when a sulfur is incorporated into the system as shown below, something odd happens.



Write a mechanism that explains the mysterious labeling results.