Although the aldol condensation has not yet been covered in lecture, today's problem set should teach you how to do it.

A. Translate the following text into a mechanism with structures and conventional curved arrows.
   **Step 1** A base (use hydroxide ion) removes the acidic alpha hydrogen from a molecule of acetaldehyde (ethanal) to form an enolate anion and a molecule of water.
   **Step 2** The enolate anion attacks the carbonyl group of a second molecule of acetaldehyde. That intermediate is then protonated to form a beta-hydroxyaldehyde (3-hydroxybutanal).
   **Step 3** The beta hydroxyaldehyde undergoes an elimination reaction (OH is the unusual leaving group here) to form an alpha, beta-unsaturated aldehyde called crotonaldehyde (2-butenal).

B. Complete the following reactions. All except #2 are examples of the aldol condensation or variations on the same theme. In #2 the enolate anion formed with LDA is alkylated by benzyl bromide in an S_{n}2 reaction. Write a mechanism for #5.