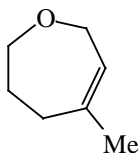


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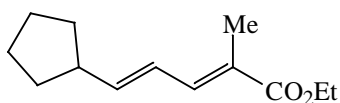
Problem Set 3

Design stereoselective syntheses of each of the following compounds from starting materials that are offered for sale by Aldrich or any other commercial supplier. *Show BOTH your retrosynthetic analysis AND your synthesis in the forward direction.* (If that means you have to draw some structures twice (gasp!), so be it.) Offer literature references for all but the most obvious steps.

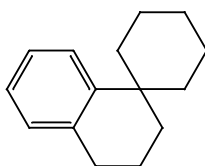
(a)



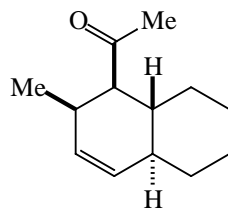
(b)



(c)



(d) The solution to this problem is simpler than it appears. This compound contains the retron for what well-known reaction? What, then, would be the precursor? Be careful to get the stereochemistry right!



(e) A vinylcycloalkene is a retron for the *enyne metathesis reaction* catalyzed by the Grubbs metathesis catalyst. (i) Draw a reasonable mechanism for enyne metathesis. (ii) Use the enyne metathesis reaction as a key step in the preparation of the compound below (Bn = PhCH₂).

