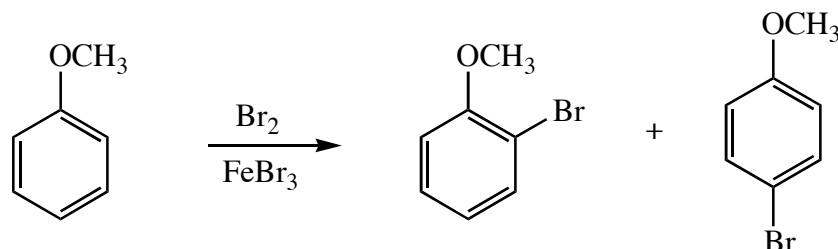


**51C Practice Problems 1**  
**Spring, 2019**

1. Anisole (*methoxybenzene*) undergoes bromination much faster than benzene, and directs incoming substituents into the *ortho*, *para* positions. Use resonance structures the carbocation intermediate formed for addition to the *ortho*, *meta*, and *para* positions to explain for the accelerated rate.



2. Provide a synthesis of the following products from the given starting materials:

**Hints:**

#1: You know how to do a simple bromination, nitration, Friedel Crafts Acylation, and Friedel Crafts Alkylation. If you have to incorporate anything more complicated than these groups, then put the simple group on first, and then do functional group manipulation using techniques from chapters 9, 10, 11, 12, 15 & 16 (only 2c below can be put on in one step).

