5. (15 pts) Pyrrole undergoes electrophilic substitution at the 2-position. Draw all resonance contributors for the intermediate formed from attack by NO₂⁺ at both the 2- and 3-positions and explain why the 2-position is favored.

![Pyrrole structure](image)

6. (5 pts) Partially hydrogenated vegetable oils, components of many foods, contain triglycerides that have unnatural trans-long-chain fatty acids in addition to naturally-occurring cis-fatty acids. Explain how the trans fatty acids appear in foods.

![Fatty acid structure](image)

7. (5 pts) The compound below has aromatic properties. Using curved arrows to show electron movement, draw another resonance contributor for this compound that more clearly shows its close relationship to benzene and other aromatic compounds. Note: Lone pairs are not shown.

![Aromatic compound structure](image)