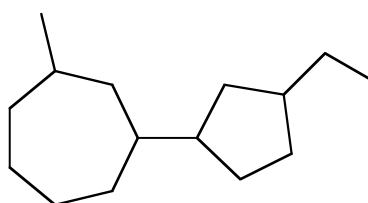
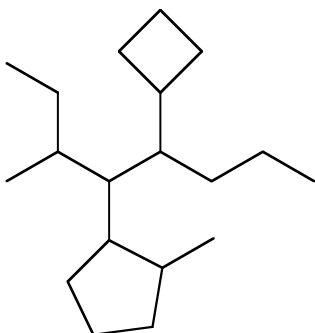
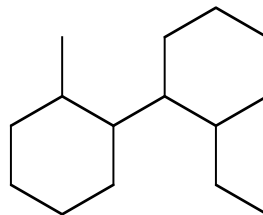
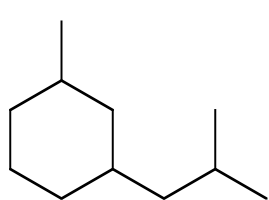
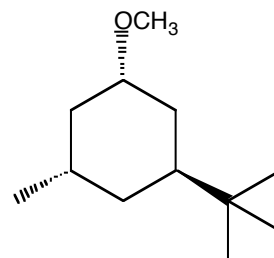
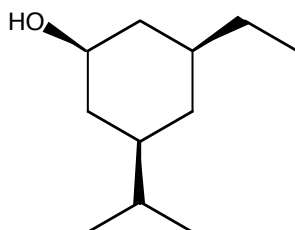
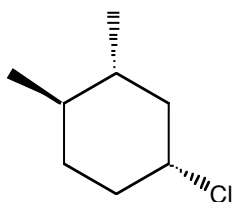
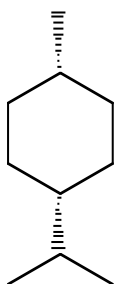


Chemistry 211 – Problem Set 4 – Due October 27th at 5:00 PM

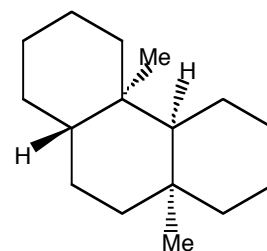
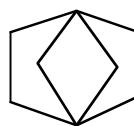
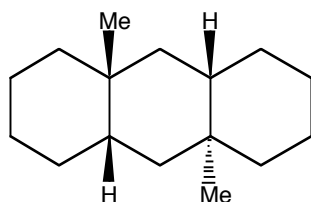
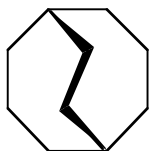
1) (20 points) Give the IUPAC name for the following compounds:



2) (20 points) Draw the most stable chair conformer for the following substituted cyclohexanes:

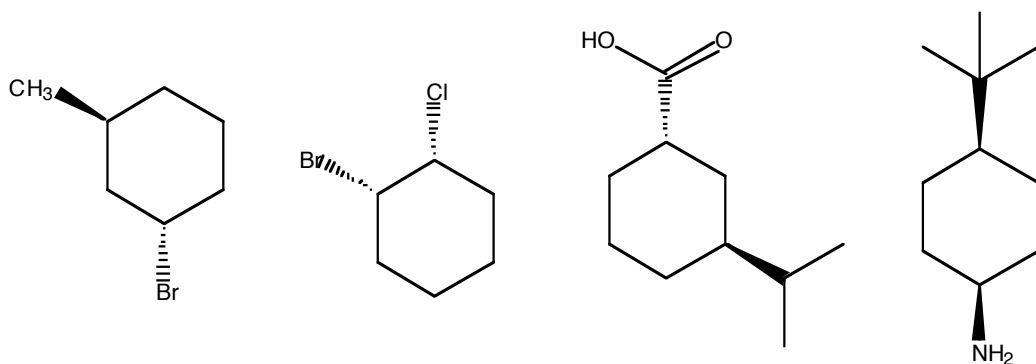


3) (20 points) Consider the following polycyclic hydrocarbons:



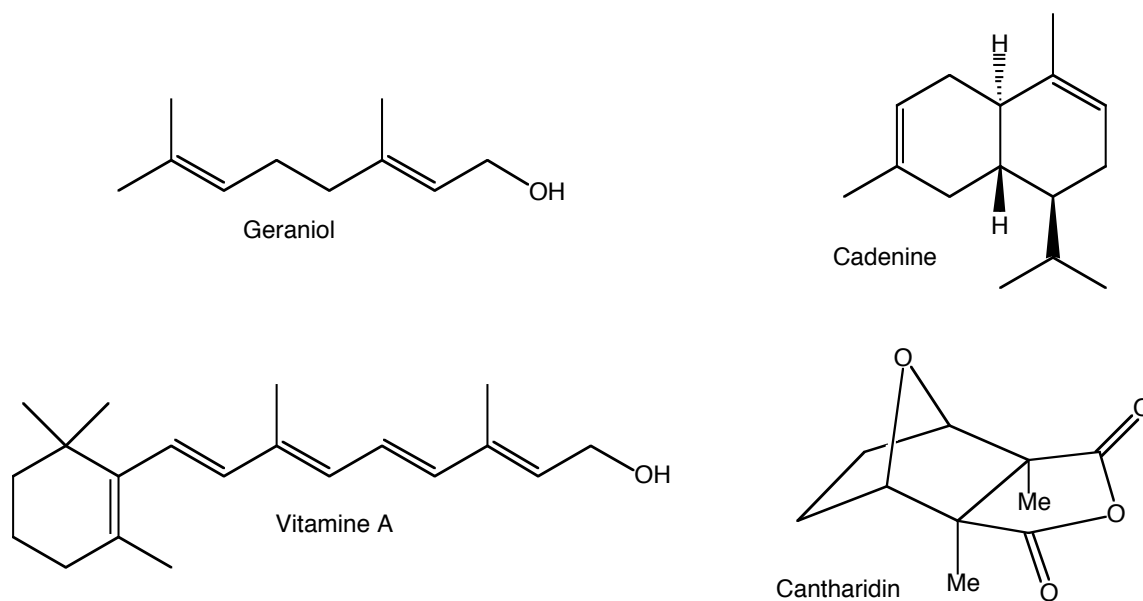
- Which of them can be classified as fused, and which ones as bridged?
- For the fused systems in part (a), draw their most stable conformers using three-dimensional representations (i.e., chairs...). Pay attention to *trans/cis* fusions.

4) (20 points) For the following di-substituted cyclohexanes:



- Draw the equilibrium between the two possible chair conformers for each compound.
- For each conformer pair, calculate the ΔG of the ring-flip (Hint: You will have to take into account the 1,4-diaxial interaction energies of each substituent...).
- Using the results obtained in part (c), determine which conformer will be the most stable in each case, and calculate the ratio of the two conformers at room temperature (Hint: $\Delta G = -RT * \ln(K)$, and once you get K you can get the ratio...).

5) (20 points) For the following naturally-occurring terpenes:



- Identify the isoprene units that make them up.
- Classify them as mono-, sesqui-, or di-terpenes.