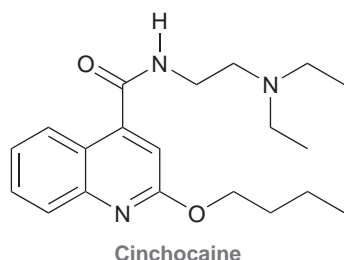




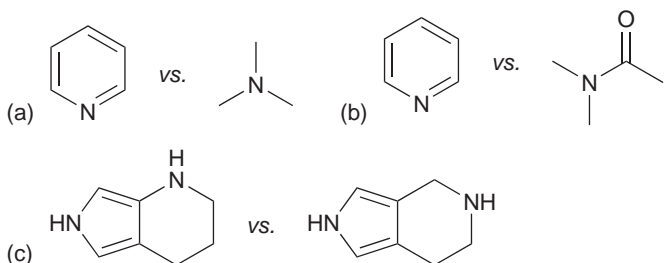
Amines

Klein, D. (2012). Amines. En *Organic Chemistry*. (pp. 1134). USA: Wiley.

23.40 Cinchocaine is a long-acting local anesthetic used in spinal anesthesia. Identify the most basic nitrogen atom in cinchocaine.



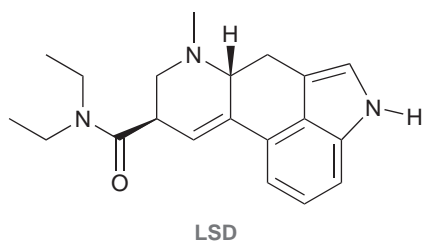
23.41 For each pair of compounds, identify the stronger base.



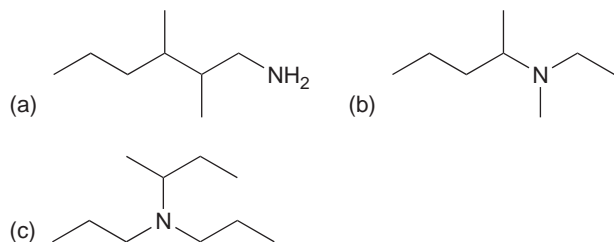
23.42 Draw the structure of each of the following compounds:

- (a) *N*-Ethyl-*N*-isopropylaniline
 (b) *N,N*-Dimethylcyclopropylamine
 (c) (2*R*,3*S*)-3-(*N,N*-Dimethylamino)-2-pentanamine
 (d) Benzylamine

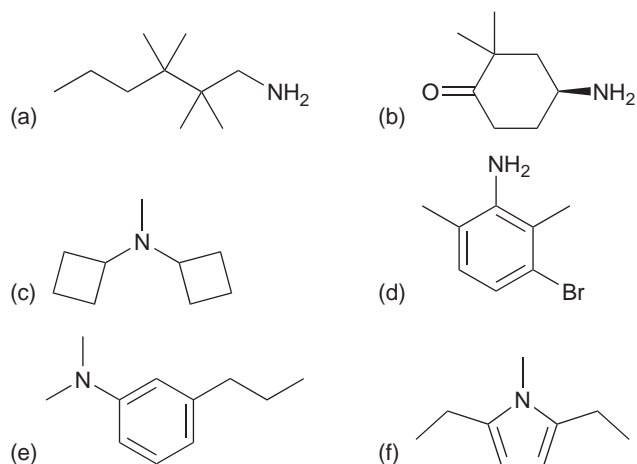
23.43 Consider the structure of lysergic acid diethylamide (LSD), a potent hallucinogen containing three nitrogen atoms. One of these three nitrogen atoms is significantly more basic than the other two. Identify the most basic nitrogen atom in LSD, and explain your choice.



23.44 Identify the number of chirality centers in each of the following compounds:



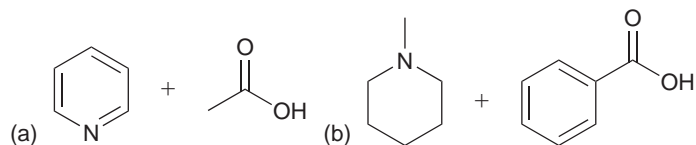
23.45 Assign a name for each of the following compounds:



23.46 Draw all constitutional isomers with molecular formula $C_4H_{11}N$, and provide a name for each isomer.

23.47 Draw all tertiary amines with molecular formula $C_5H_{13}N$, and provide a name for each isomer. Are any of these compounds chiral?

23.48 Each pair of compounds below will undergo an acid-base reaction. In each case, identify the acid, identify the base, draw curved arrows that show the transfer of a proton, and draw the products.



23.49 Draw the structure of the major product obtained when aniline is treated with each of the following reagents:

- (a) Excess Br_2
 (b) $PhCH_2COCl$, py
 (c) Excess methyl iodide
 (d) $NaNO_2$ and HCl followed by H_3PO_2
 (e) $NaNO_2$ and HCl followed by CuCN

23.50 Identify how you would make each of the following compounds from 1-hexanol:

- (a) Hexylamine (b) Heptylamine (c) Pentylamine

23.51 Identify how you would make hexylamine from each of the following compounds:

- (a) 1-Bromohexane
 (b) 1-Bromopentane
 (c) Hexanoic acid
 (d) 1-Cyanopentane

23.52 Tertiary amines with three different alkyl groups are chiral but cannot be resolved because pyramidal inversion causes racemization at room temperature. Nevertheless, chiral aziridines can be resolved and stored at room temperature.