Chapter 16 Worksheet

1. For each compound below, state the number of $\pi$-electrons in the conjugated cycle, if any, and state whether the compound is aromatic, antiaromatic, or non-aromatic.
2. For each compound below, state the number of \( \pi \)-electrons in the conjugated cycle, if any, and state whether the compound is aromatic, antiaromatic, or non-aromatic. Show how the \( \pi \)-electrons are delocalized by drawing all the significant resonance structures for each compound.

a. \( \text{NHN} \)

b. \( \text{BH} \)

c. \( \text{N} \)

d. \( \text{B}^{+} \)

e. \( \text{BO} \)
3. Draw the following compounds.
(a) m-vinylbenzoic acid
(b) p-bromophenol
(c) o-(3,5-dinitrophenyl)toluene
(d) 3,4-dichloro-N,N-diethylaniline