

Part 1: NO₂⁻

1. Trigonal Planar
2. Bent
3. Polar
4. The Lewis structure provided for NO₂⁻ has the correct number of valence electrons and does not violate the octet rule. However, one improvement that could be made, is to structure the lewis structure in a way that would be modeled similar to its molecular geometry, being bent.

Part 1: NO₂⁺

1. Linear
2. Linear
3. Non polar
4. I would not change anything to the Lewis structure provided for NO₂⁺. The compound has the correct number of valence electrons, and does not violate the octet rule. Furthermore, it models after its molecular geometry, being linear.

Part 2:

1. They have the same electron pair geometry, however, they do not have the same molecular geometry. This is due to the fact that the two compounds have differing numbers of lone pair electrons on the central atom. Which affects their molecular geometry, but not their electron pair geometry.
2. They have different polarities due to one of the compounds being perfectly symmetrical causing it to be non polar, whereas its counterpart is not symmetrical making it polar.