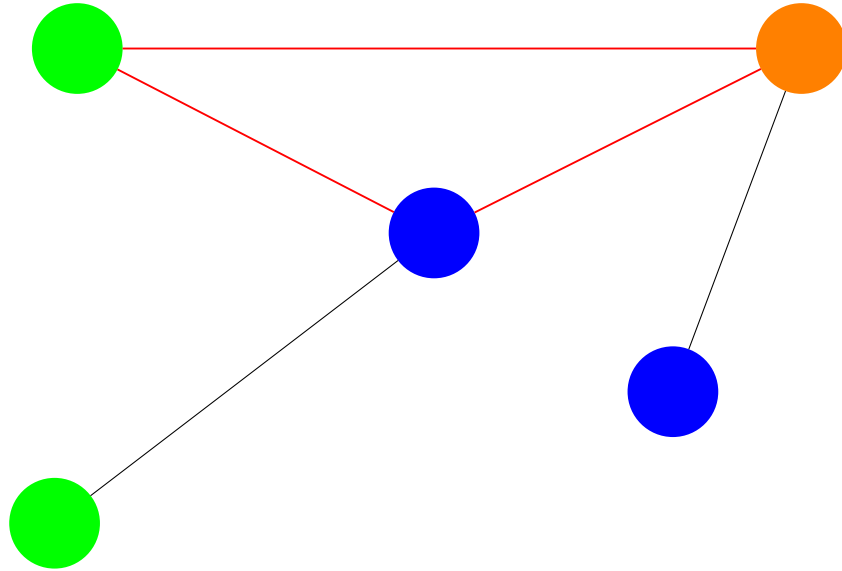
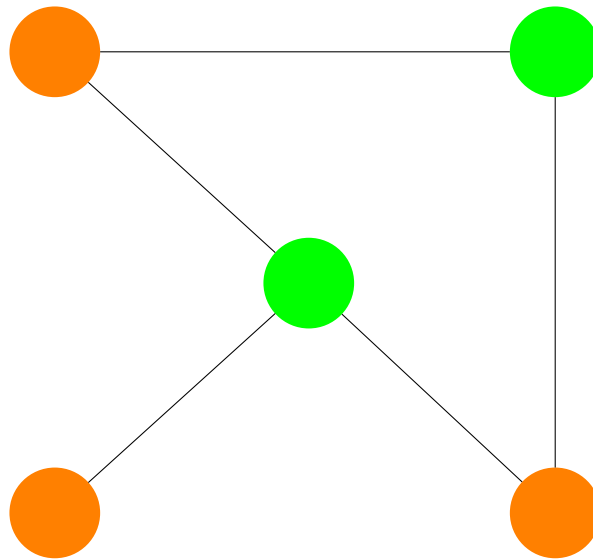


Graph 1:



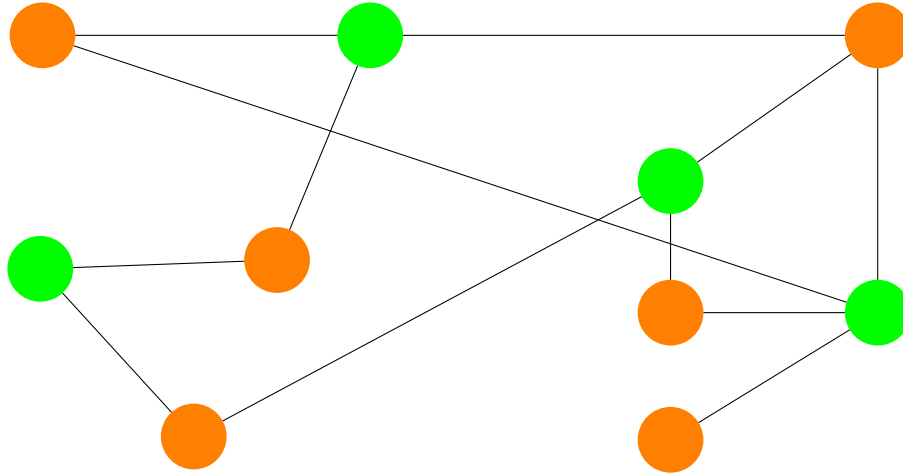
Not two-colorable because of the length-3 cycle highlighted in red. Recall: if a graph has an odd-length cycle, it is not two-colorable. However, it can be three-colored!

Graph 2:



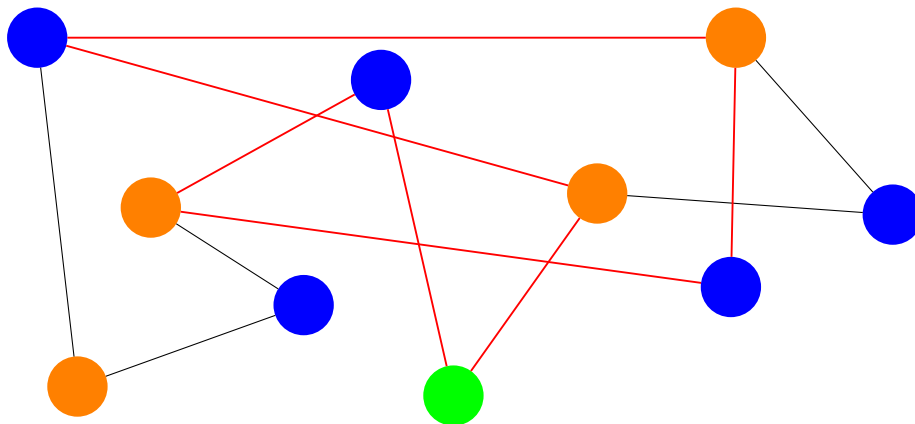
Can be two-colored (as shown), and can also be three-colored. In fact, any graph that can be two-colored can also be three-colored!

Graph 3:



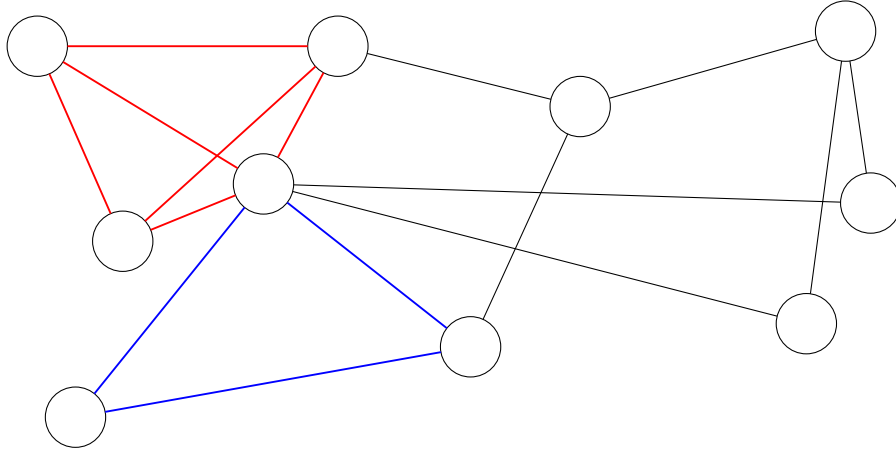
This graph can be two-colored (as shown), and can also be three colored. Again, two-colorable implies three-colorable.

Graph 4:



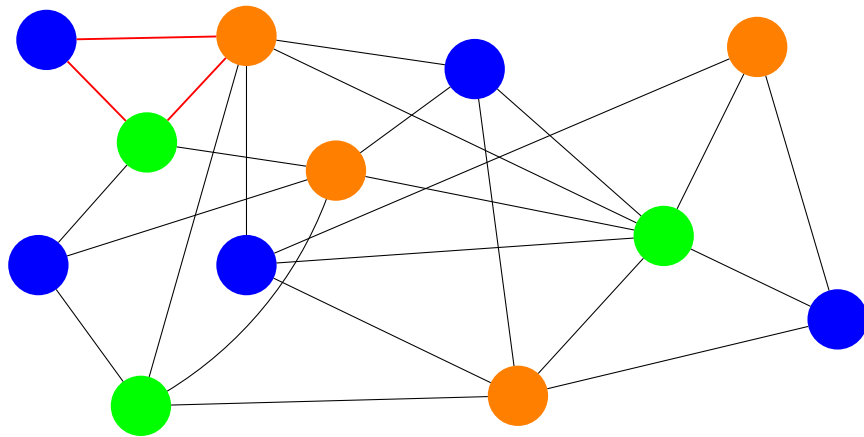
This graph cannot be two-colored because of the length-7 cycle highlighted in red, but it can be three-colored (as shown).

Graph 5:



The graph is not two-colorable because of the length-3 cycle in blue, and is not three-colorable because of the structure in red.

Graph 6:



This graph is not two-colorable because of the red length-3 cycle, but is three-colorable (as shown).