There are several orbital viewers available online that allow students to view nice displays of atomic orbitals:

<https://undergrad-ed.chemistry.ohio-state.edu/H-AOs/index.html>

<http://www.uwosh.edu/faculty_staff/gutow/Orbitals/Cl/Cl_AOs.shtml>

<http://winter.group.shef.ac.uk/orbitron/>

Using any of the orbital viewers provided above, answer the following.

1. What **type of bonding (σ, π, δ or no interaction) molecular orbital** will be formed when these orbitals approach each other along the x axis?

|  |  |
| --- | --- |
|  | 1. py and dxy |
|  | 1. px and dx2-y2 2. dxz and dxz      1. dyz and dyz 2. s and dxz |

1. The first rule of Molecular Orbital Theory states that the number of molecular orbitals produced is always equal to the number of atomic orbitals brought by the atoms that combined. For the combinations that produced **bonding** molecular orbitals, sketch the other possibility which is a destructive combination leading to an **antibonding** molecular orbital.