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10) see above

11) Add two p-functions: $p_\alpha = \cos\alpha \cdot p_x + \sin\alpha \cdot p_y$. Describe what that is.

12) Assume the orbital normalization is $\langle s|s\rangle = \langle p|p\rangle = 1$. What is the normalization of $\langle h|h\rangle$, where the hybrid is $h = (s + \sqrt{2} \cdot p)/\sqrt{3}$?

13) Compare the density of $(s, p) = s^2 + p^2$, with that of the two hybrids (h_+, h_-); $h_+ = (s + p)/\sqrt{2}$ and $h_- = (s - p)/\sqrt{2}$.

14) Sketch and discuss the electron configuration of H_2^- .

15) Which molecules will become more/less strongly bound upon adding an electron: C_2, NO, O_2, F_2?