

# Quiz #2

100%

Chemistry 20A

Professor Baugh

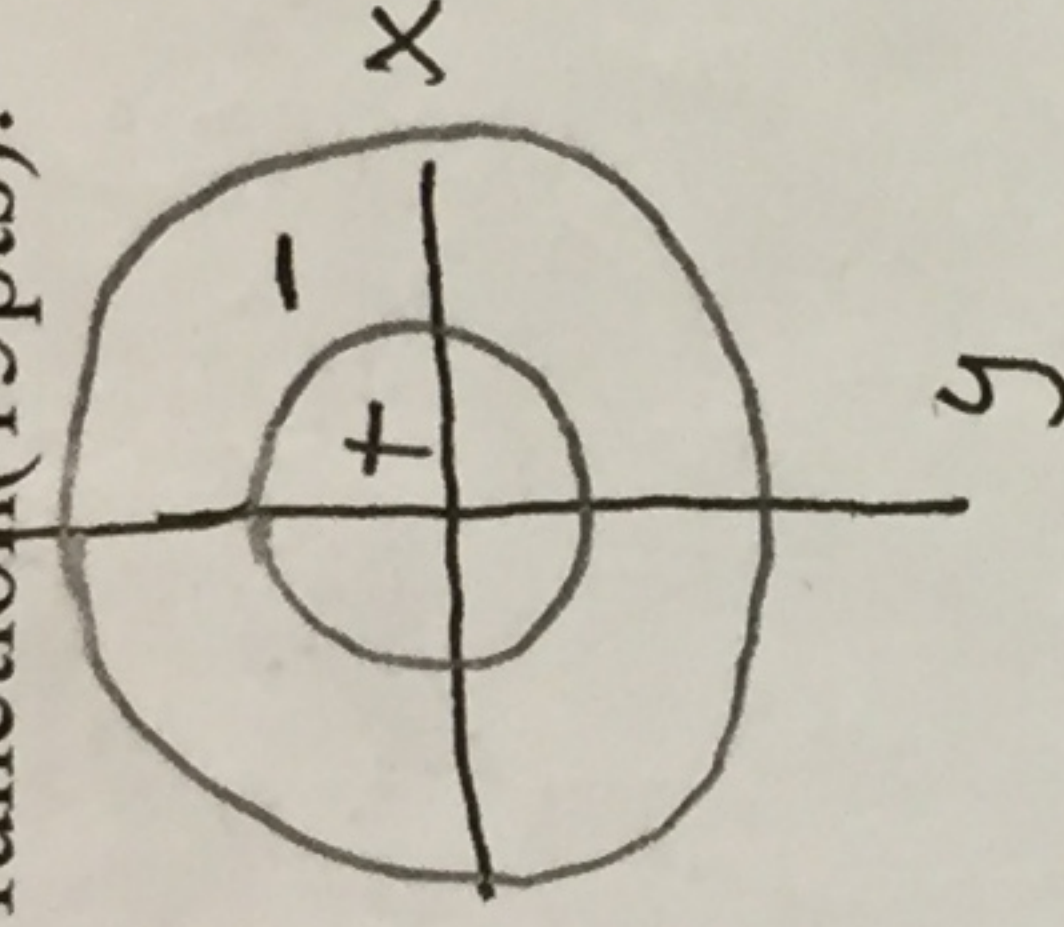
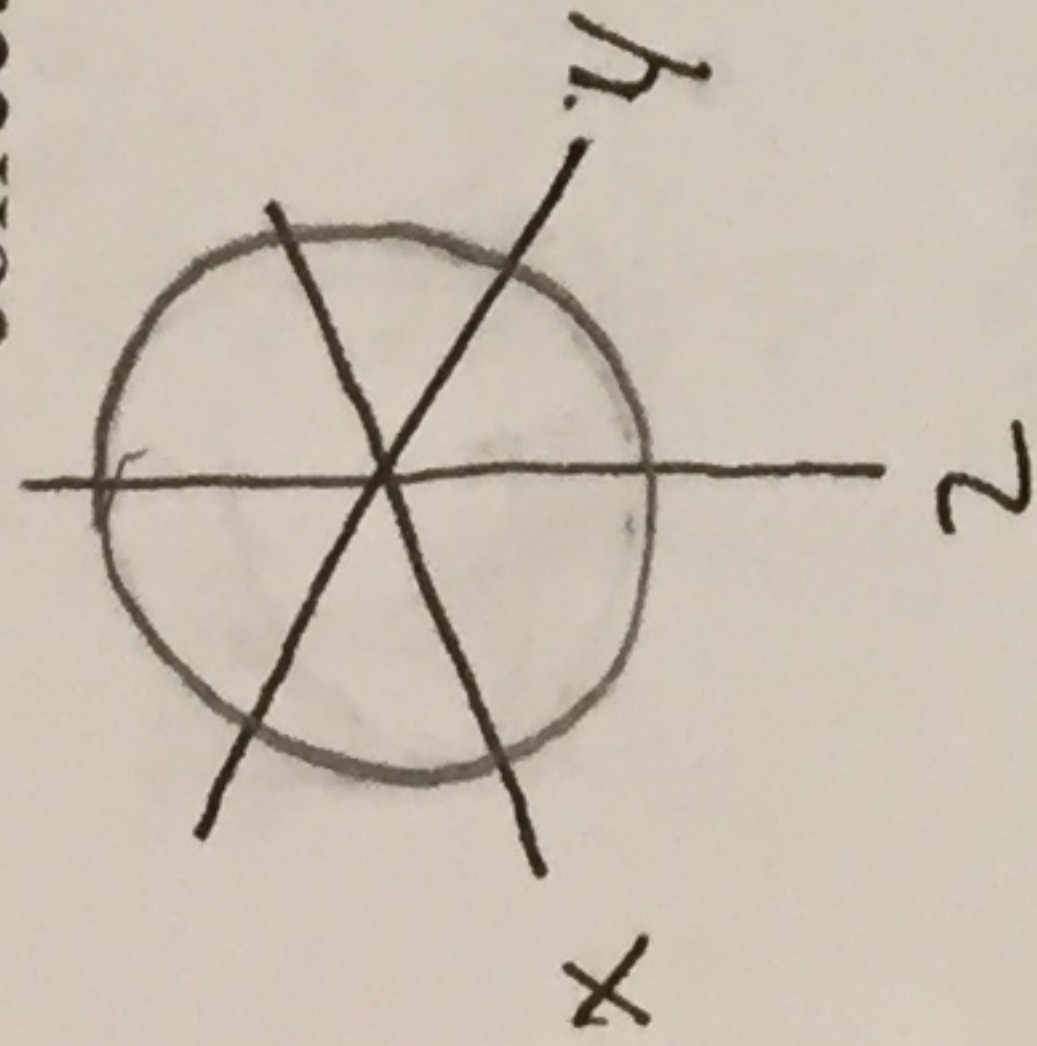
Name Alex August-schmidt

Discussion section 2D

T.A. Adam Makhluf

1. Consider a 2s atomic orbital.

- a. First, draw the 3-d shape (10pts). Then draw a slice through the center showing the correct phases of the wave function (15pts).



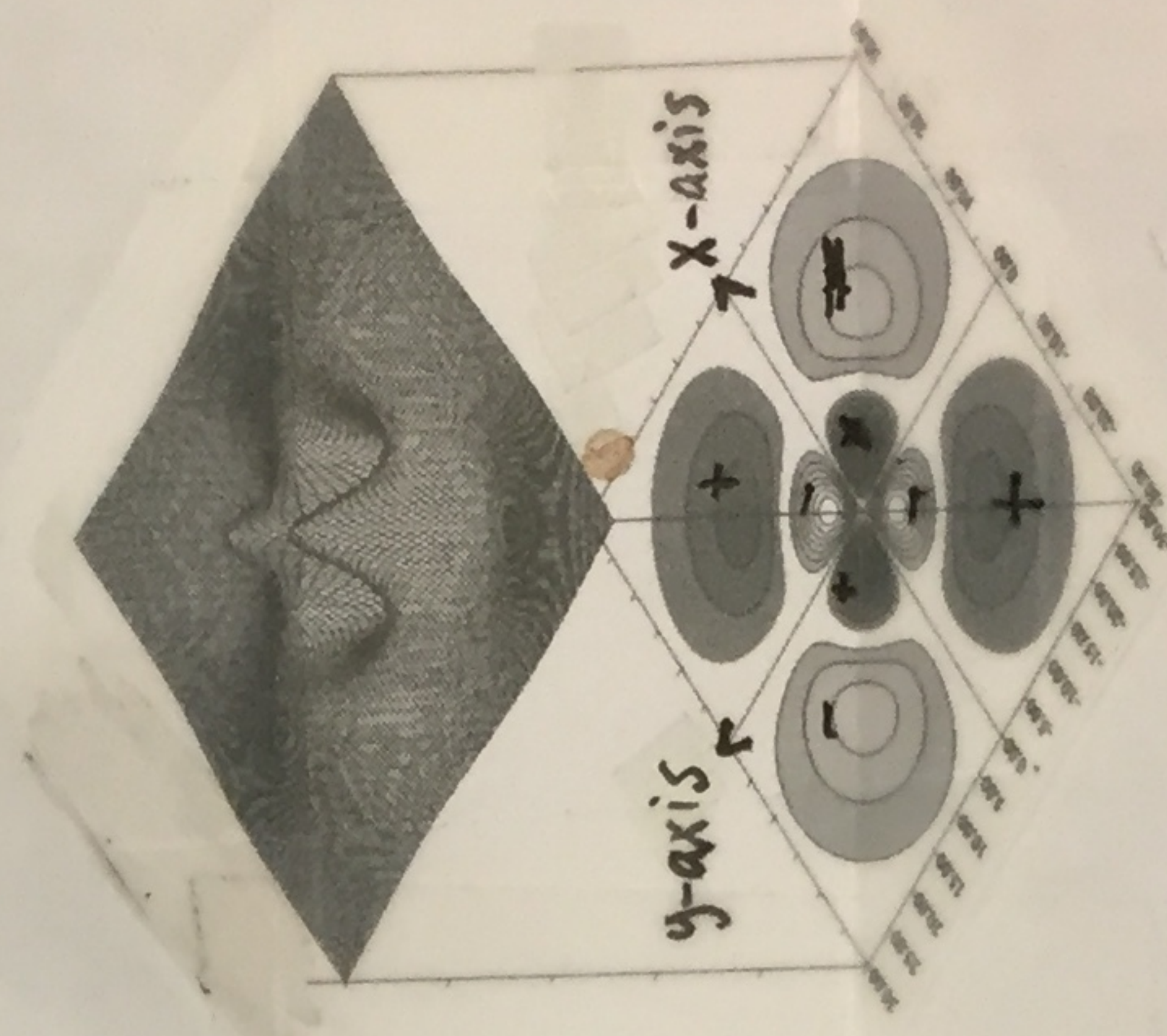
b. The 2s orbital has 1 radial node(s) and 0 angular node(s) (15pts)

c. What is a node? (one sentence only) (10pts)

A node is a an or space where the electron is a phase change in the wave function, and thus, the electron has zero displacement, and thus, the electron has zero probability of being there.

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wave function has zero displacement, and thus, the electron has zero probability of being there.



Did you get my 7 email? This has been drawn could have been drawn with all (+) & (-) switches i.e. only relative matter.

a. This is a 4d<sub>xy</sub> atomic orbital. (20pts)

b. There are 1 radial node(s) and 2 angular node(s). (15pts)

c. How did you determine the number of radial and angular nodes? (15pts)

Angular nodes = l

radial nodes = n-l-1

$$l = 2$$

$$n = 4$$

$$l = 2$$

Angular nodes = 2

radial nodes = 4-2-1

Angular nodes can be determined by encountering

a phase change while traveling on a spherical path from 0 to  $2\pi$ .

In this case, there are 2 phase changes.

radial nodes = 1

Radial nodes are determined by the number of phase changes encountered while traveling out from the nucleus. In this case there is 1 radial node.

very nice