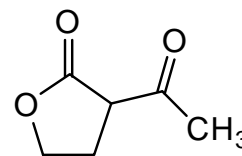


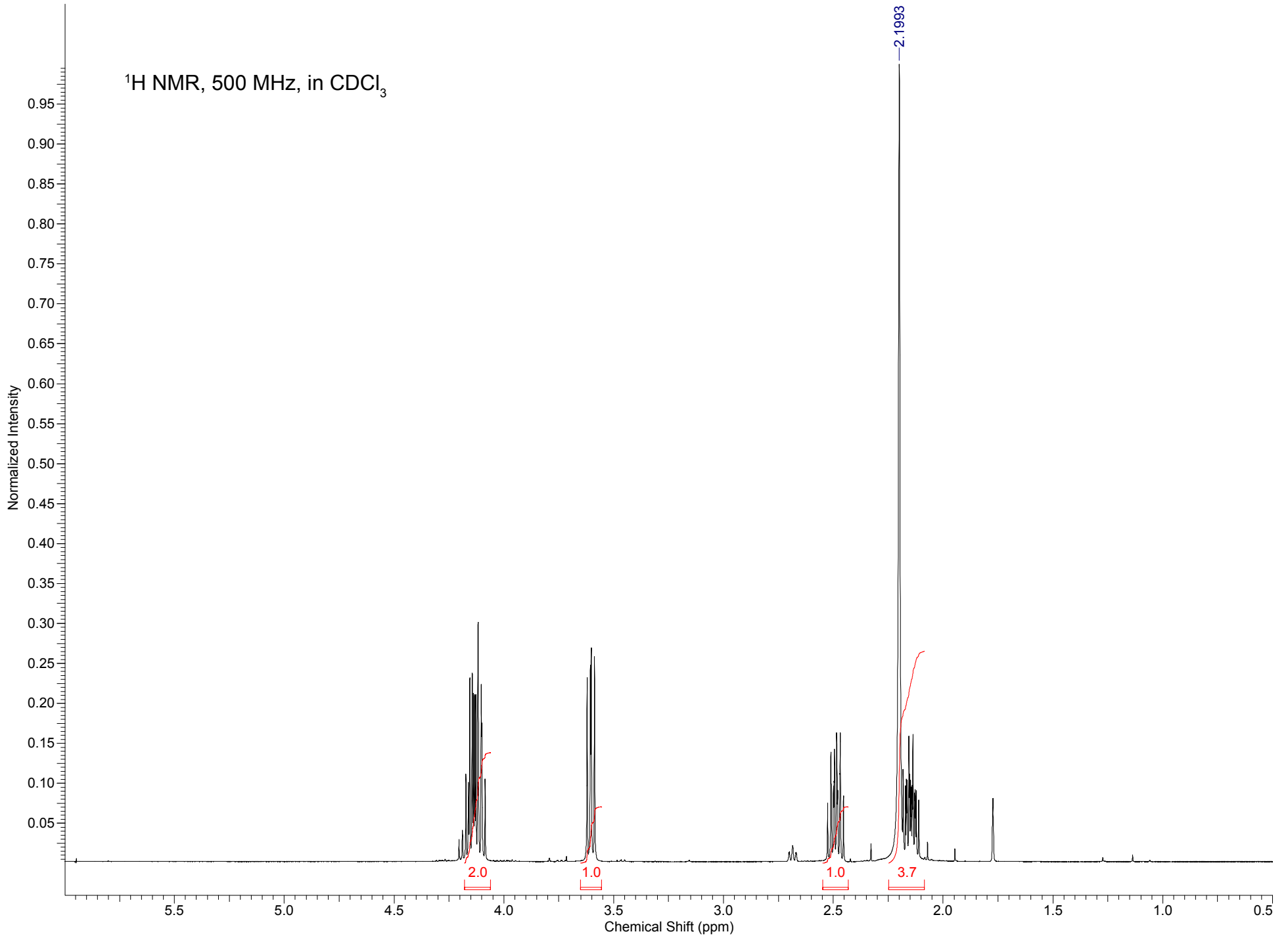
**Discussion Section Exercise:
Complex Splitting Patterns in ^1H NMR**

The NMR spectra on the following pages—including close-ups and resolution-enhanced spectra—are of the molecule shown at left. Answer the following questions about these spectra:

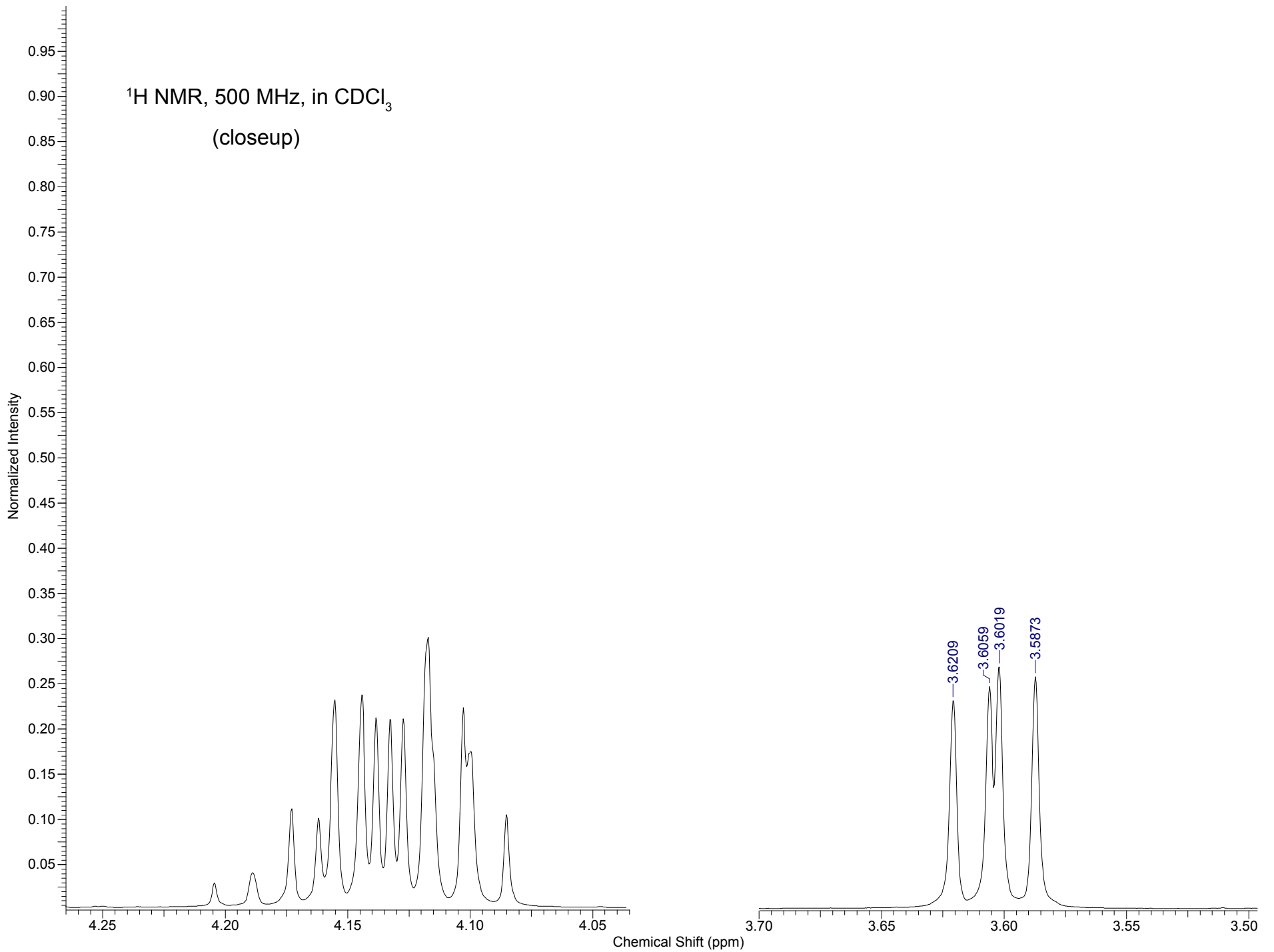


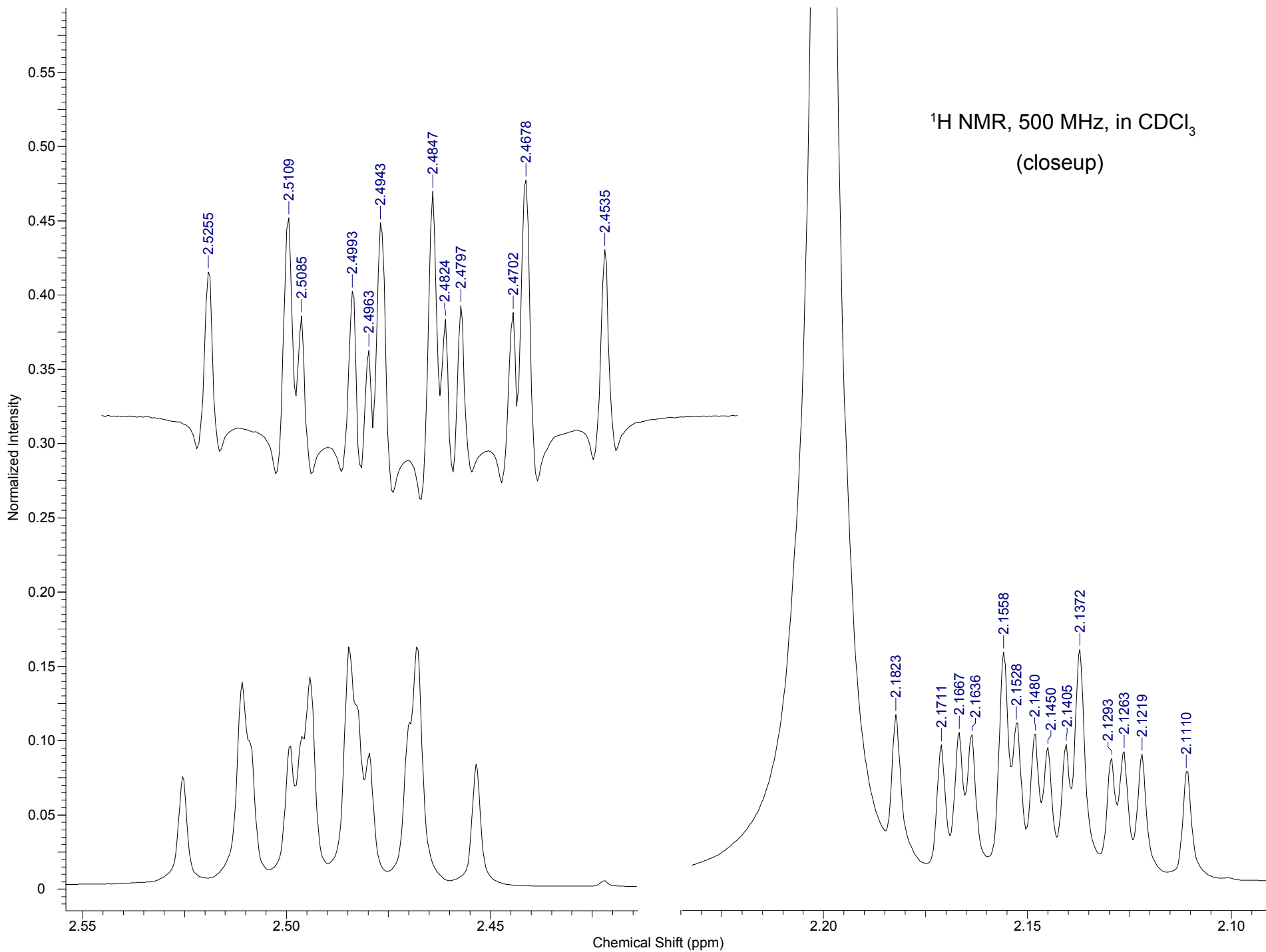
1. What J values do you calculate for the resonances at $\delta = 2.50$ and 2.15 ppm? Which protons do these resonances correspond to? Which protons do they couple to?
2. The signals in the $\delta = 4.15$ ppm region of the spectrum come from two overlapping resonances, and I wasn't able to tease them apart. (Sometimes you can.) One thing that makes these multiplets difficult to decipher is that it seems like the peak intensities are non-integral, that some peaks are shorter than they should be and some are taller. Why would that happen here, but not for any of the other multiplets in this spectrum?
3. Assign the ^{13}C NMR spectrum.

^1H NMR, 500 MHz, in CDCl_3



^1H NMR, 500 MHz, in CDCl_3
(closeup)





^{13}C NMR, 125 MHz, in CDCl_3

