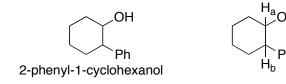
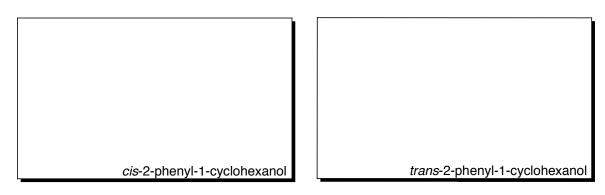
4. ¹H NMR spectra are shown below for a single diastereomer of 2-phenyl-1-cyclohexanol. (15 points)



a. Draw *cis*-2-phenyl-1-cyclohexanol in the most stable chair conformation and draw *trans*-2-phenylcyclohexanol in the most stable chair conformation.



b. Name the multiplets (multiplicity and *J* values) you would expect for H_a and H_b in the *cis*- and *trans*-diastereomers.

cis-2-phenyl-1-cyclohexanol H _a
cis-2-phenyl-1-cyclohexanol H _b
trans-2-phenyl-1-cyclohexanol H _a
<i>trans</i> -2-phenyl-1-cyclohexanol H _b

c. Shown below is a 300 MHz 1 H NMR spectrum of a single diastereomer of 2-phenyl-1-cyclohexanol in CDCl₃.

Which stereoismer is it?

How do you know?

3.6 ppm			
$\wedge \wedge \wedge$	2.4 ppm		
0 10 20 40 Hz 0	10 20 40 Hz		
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