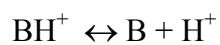


HW 5	Multinuclear NMR	Name:	
Points:	C6800	Date:	
Max. 100 points	Spring 2011	Version A	

1. Derive an expression for pH value as a function of observed chemical shift in a weak acid BH^+ system, when pK_a is known and δ_B , δ_{BH} were measured independently:



$$pH = f(\delta_{obs}, \delta_B, \delta_{BH}, pK_a)$$

$$K_a = \frac{[H][B]}{[HB]} \quad \delta_{obs} = \frac{\delta_B[B] + \delta_{BH}[BH]}{[B] + [BH]}$$