AP Chem **Two Polyprotic Acids** Name _____

Show all your work clearly (in a way you'll understand the week before the AP exam).

1. Calculate the pH of a 6.5 M sulfurous acid solution (Ka_1= 1.5 x 10^{-2}, Ka_2= 1.0 x 10^{-7}). Also find the equilibrium concentrations of each of the following species in equilibrium:

pH= _____

$[H_2SO_3]$ = _____

$[HSO_3^-]$ = _____

$[SO_3^{-2}]$ = _____

[OH-] = _____

(over)

2. Calculate the pH of a 4.2 M arsenic acid solution. (Ka_1= 5.8 x 10^{-3}, Ka_2= 1.1 x 10^{-7}, Ka_3= 3.2 x 10^{-12}). Also find the equilibrium concentrations of each of the following species in equilibrium:

pH= _____

$[H_3AsO_4]$ = _____

$[H_2AsO_4^-]$ = _____

$[HAsO_4^{-2}]$ = _____

$[AsO_4^{-3}]$ = _____

[OH-] = _____