

- 4) The pH of a H_2SO_4 solution is 2. What is the initial concentration of H_2SO_4 ? $K_{a2} = 0.01$

	HSO_4^-	SO_4^{2-}	H^+
Initial	X	0	X
Change	-Y	+Y	+Y
Equilibrium	X-Y	Y	0.01

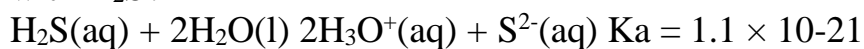
$$0.01 = 0.01Y/(X-Y) \quad X+Y=0.01 \rightarrow X=0.006\text{M} \quad Y=0.003\text{M}$$

	H_2SO_4	HSO_4^-	H^+
Initial	Z	0	0
Change	-0.006	+0.006	+0.006
Equilibrium	Z-0.006	0.006	0.006

$$K_{a1} = 0.006^2/(Z-0.006)$$

_That is all that I could reach. I don't know how to continue or if there is a mistake in my answer until now.

- 6) What is the S^{2-} concentration of a 10^{-3} M HCl solution which is saturated with H_2S ?



	H_2S	H^+	S^{2-}
Initial	Y	10^{-3}	0
Change	-X	+X	+X
Equilibrium	Y-X	$X+10^{-3}$	X

$$1.1 \times 10^{-21} = X(X+10^{-3})/(Y+X)$$

_That is all that I could reach. I don't know how to continue or if there is a mistake in my answer until now.