## Acid - Base problems

$\mathrm{NH}_{4}^{\oplus}+\mathrm{RCH}_{2} \mathrm{O}^{\ominus} \rightleftharpoons \mathrm{NH}_{3}+\mathrm{RCH}_{2} \mathrm{OH}$ $\mathrm{ArOH}+\mathrm{ArSO}_{3}^{\ominus} \rightleftharpoons \mathrm{ArO}^{\ominus}+\mathrm{ArSO}_{3} \mathrm{H}$ $\mathrm{H}_{2} \mathrm{~S}+\mathrm{H}_{2} \mathrm{O} \rightleftharpoons \mathrm{HS}^{\ominus}+\mathrm{H}_{3} \mathrm{O}^{\oplus}$ $\mathrm{H}_{2} \mathrm{O}+\mathrm{H}-\mathrm{C} \equiv \mathrm{C}^{\ominus} \rightleftharpoons \mathrm{HO}^{\ominus}+\mathrm{H}-\mathrm{C} \equiv \mathrm{C}-\mathrm{H}$
$\mathrm{CH}_{4}+\mathrm{F}^{\ominus} \rightleftharpoons \mathrm{CH}_{3}^{\ominus}+\mathrm{HF}$


For the above problems, you should be able to use the aKa chart on the web site to determine in which direction the reaction prefers to proceed. You should also use the knowledge gained from lecture to draw the arrows for the acid/base reactions in each direction.

