**Chemistry 3.6 AS 91392** Demonstrate understanding of equilibrium principles in aqueous systems



Writing Excellence answers to **Titration Curve – Start pH** questions

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| **Titration Curve – Start pH QUESTION**  |
| **Question:**  A titration was carried out by adding hydrobromic acid, HBr, to 20.0 mL of aqueous methylamine, CH3NH2, solution. The equation for the reaction is: CH3NH2 + HBr → CH3NH3+ + Br– *K*a(CH3NH3+) = 2.29 × 10–11Kw = 1.00×10-14The aqueous methylamine, CH3NH2, solution has a pH of 11.8 before any HBr is added. Show by calculation that the concentration of this solution is 0.0912 mol L–1.   |
| **ANSWER** |
| **1.** determine if starting solution is acid or base (will it accept or donate H+) – strong or weakAnd write down all available information |  |
| **2.** calculate [H3O+][H3O+] = 10-pH*3sgf and units*  |  |
| **3.** write out Ka expressionKa = [base][H3O+] [conj acid]And thenKa = [base][H3O+] [OH-] |  |
| **4.** rearrange to calculate [CH3NH2][CH3NH2] = Ka x Kw  [H3O+]2*Assumptions: [base] = [H3O+]* *[OH-] = Kw / [H3O+]* *3sgf and units* |  |

NOTE: The white column is how your answer would appear on your test paper so make sure you **write out complete sentences**. The grey area is just to help you structure your answer and would not appear in the question.