Calculation of pH in the case of monoprotic acids and bases

1. What is the pH of a 0.1 M acetic acid solution?
2. What is the pH of a 0.1 M ammonia solution?
3. What is the pH of a 0.1 M sodium acetate solution?
4. What is the concentration (in g/dm^3 units) of an ammonia solution which has a pH of 11.100?
5. A monobasic organic acid has a p*K* of 4.875. The pH of a saturated solution of this acid is 3.700. Calculate the solubility of this organic acid in mol/dm^3 units.
6. What are the pH and the degree of dissociation in a a) 0.1 M; in a b) 0.01 M and in a c) 0.001 M acetic acid solution, respectively?
7. What is the pH in a 0.010 M solution of a moderately weak acid if the $K_a = 1.5 \times 10^{-5}$?
8. A windscreen washing liquid contains ammonia in 2.00 g/dm^3 concentration. What is the pH of this liquid?
9. 20.00 cm^3 of 0.1 M ammonia solution is titrated with 0.25 M $HClO_4$. What is the added volume of titrant and the pH at 75% degree of titration?
10. The concentration of a monochloro acetic acid solution is 0.001 M. What are the pH and the degree of dissociation in this solution?

$K_a = 1.86 \times 10^{-5}$ for acetic acid

$K_a = 1.20 \times 10^{-3}$ for monochloro acetic acid

$K_b = 1.75 \times 10^{-5}$ for ammonia