Answer on Question #78398 - Chemistry - Physical Chemistry

Question:

Estimate pH in 0.5 M solution of Ammonium sulfate (pKb=4.75).

Solution:

$K_b = 10^{-pKb}$

$$[OH] = \sqrt{K_b \cdot c} = \sqrt{1.78 \cdot 10^{-5} \cdot 0.5} = \sqrt{8.89 \cdot 10^{-6}} = 2.98 \cdot 10^{-3} M;$$

pOH = -lg[OH] = -lg(2.98·10^{-3}) = 2.53;

pH = 14 - pOH = 14 - 2.53 = 11.47.

Answer: 11.47.