

A tough acid-base indicator problem

You'll definitely need a calculator for this one...

HNO₂ is a weak acid with a $K_a = 1.9 \times 10^{-4}$. A 20.00 mL aliquot of a 2.000 M solution of HNO₂ was titrated with 2.000 M NaOH. The indicator used had a $pK_{ind} = 4.50$.

- a) At what volume of added NaOH will the end point of the titration be reached? **[17.15 mL]**
- b) Is this a good indicator to use for this titration? **[No – changes colour 2.85 mL (14.3 %) too early.]**