

The pH of 0.200 M NaA ( the sodium salt of a weak acid HA ) is 8.24.

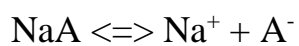
Calculate the pK<sub>a</sub> of the weak acid HA.

$$\text{pH} = 8.24$$

$$C(\text{NaA}) = 0.200 \text{ M}$$

$$\text{pK}_w = 14$$

$$\text{pK}_a = ?$$



$$\text{pH} = \frac{1}{2} (\text{pK}_a + \text{pK}_w + \lg C)$$

$$8.24 = \frac{1}{2} (\text{pK}_a + 14 - 0.69)$$

$$16.48 = \text{pK}_a + 14 - 0.69$$

$$\text{pK}_a = 3.17$$

This weak acid is HF.

Answer provided by [www.AssignmentExpert.com](http://www.AssignmentExpert.com)