

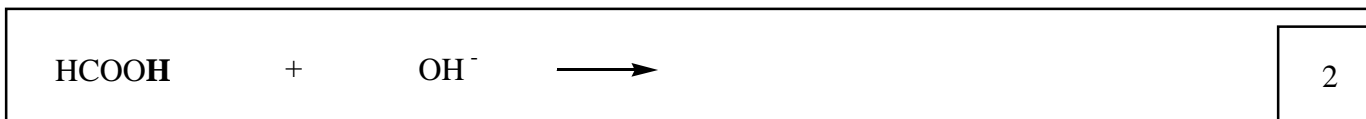
Problem of the Day 32 CHEM 1252

1. A 20.00 mL sample of 0.150 M formic acid, HCOOH, was titrated to the endpoint with 0.250 M NaOH. K_a for formic acid is 1.8×10^{-4} .

a) What is the pH of the solution before any NaOH is added? *Any assumptions in calculations must be justified!*

	pH=	10
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b) Complete the titration reaction. The acidic proton is bold faced.



c) How many moles of formic acid are present in the 20.00 mL sample?

	2
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d) What is the pH of the solution after 8.00 mL of NaOH has been added?

	pH =	8
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1. (cont'd)

e) What is the volume of NaOH needed to reach the equivalence point?

	2
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f) What is the concentration of each species in the titration reaction at the equivalence point?

	4
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g) Write the chemical reaction that explains the pH at the equivalence point. (*Hint: what is the substance(s) in f) that will affect the pH at the equivalence point?*)

	4
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h) What is the pH at the equivalence point? *Any assumptions in calculations must be justified!*

	10
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pH =