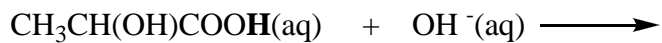


Problem of the Day 34 CHEM 1252

1. Lactic acid, $\text{CH}_3\text{CH}(\text{OH})\text{CO}_2\text{H}$ ($K_a = 1.38 \times 10^{-4}$), is an important biological molecule. A 15.00 mL sample of 0.850 M lactic acid was titrated to the phenolphthalein endpoint with 0.510 M KOH solution. The following questions apply to this titration.

a) Complete the titration reaction. The acidic proton is boldfaced. Make sure you include physical states.



b) How many millimoles of lactic acid are present at the start of the titration?

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c) What is the volume of KOH needed to reach the equivalence point?

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d) What is the pH after 12.5 mL of 0.510 M KOH have been added?

pH =	8
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e) What is the pH at the equivalence point? (*Hint: Identify the dominant species that affects the pH at the equivalence point and write out its chemical reaction.*)

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f) What is the pH after 28.0 mL of KOH have been added?

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