

CEE 680: Water Chemistry

Lecture #24

Dissolved Carbon Dioxide: Open & Closed
Systems V

(Stumm & Morgan, Chapt.4)

Benjamin; Chapter 7

In-Class Practice

- For a closed system, what is the pH of:
 - 10^{-3} M solution of H_2CO_3
 - 10^{-3} M solution of NaHCO_3
 - 10^{-3} M solution of Na_2CO_3
- For an open system, what is the pH of:
 - 10^{-3} M solution of H_2CO_3
 - 10^{-3} M solution of NaHCO_3
 - 10^{-3} M solution of Na_2CO_3

More practice

- What is the pH of a blend of the following:
 - 1 MGD of pH 6.5 water with a Alkalinity of 50 mg/L
 - 0.5 MGD of pH 8.5 water with an Alkalinity of 500 mg/L

$$Alk = (\alpha_1 + 2\alpha_2) \frac{K_H P_{CO_2}}{\alpha_0} + [OH^-] - [H^+]$$

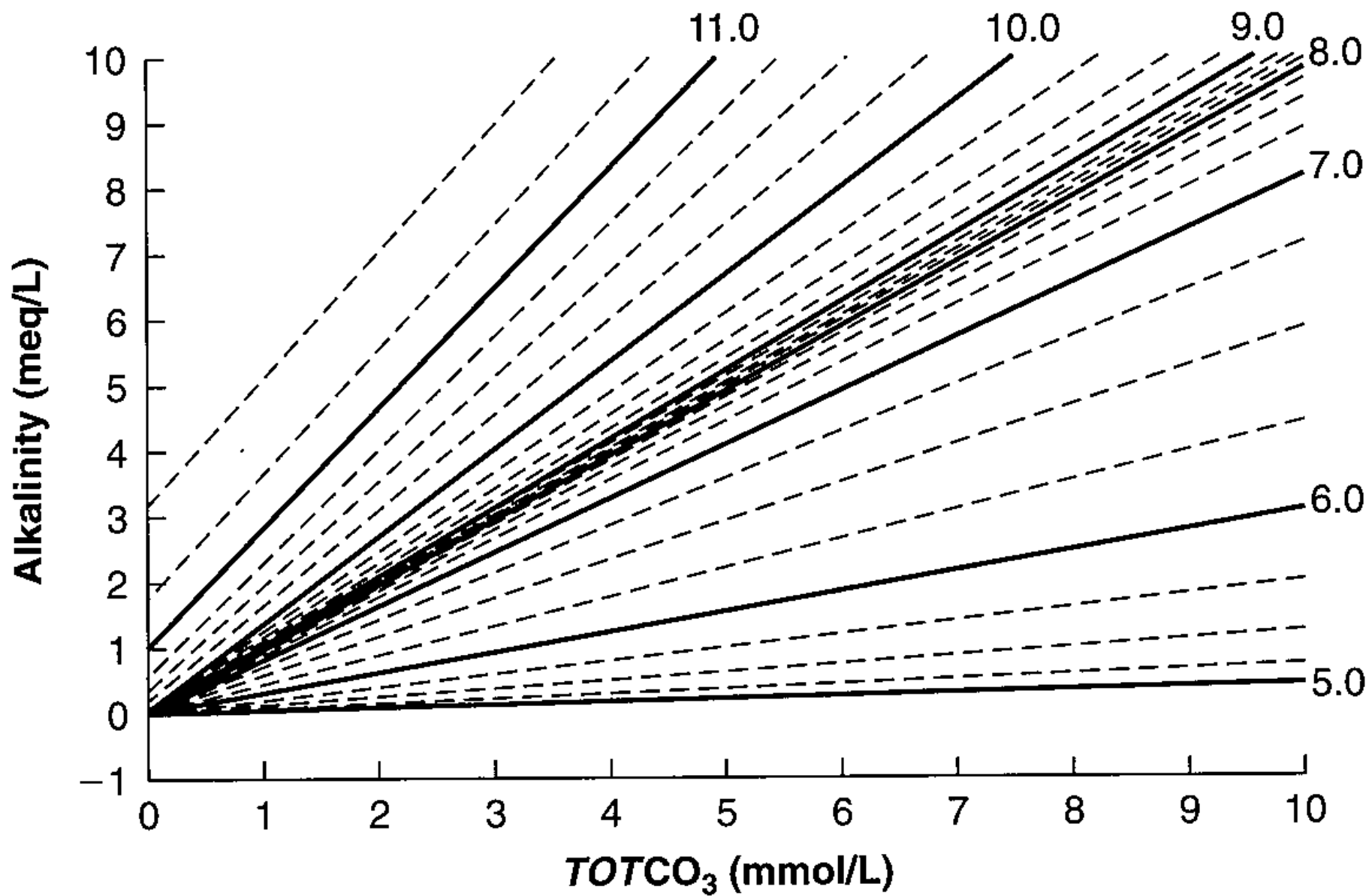
$$Alk = (\alpha_1 + 2\alpha_2) C_T + [OH^-] - [H^+]$$

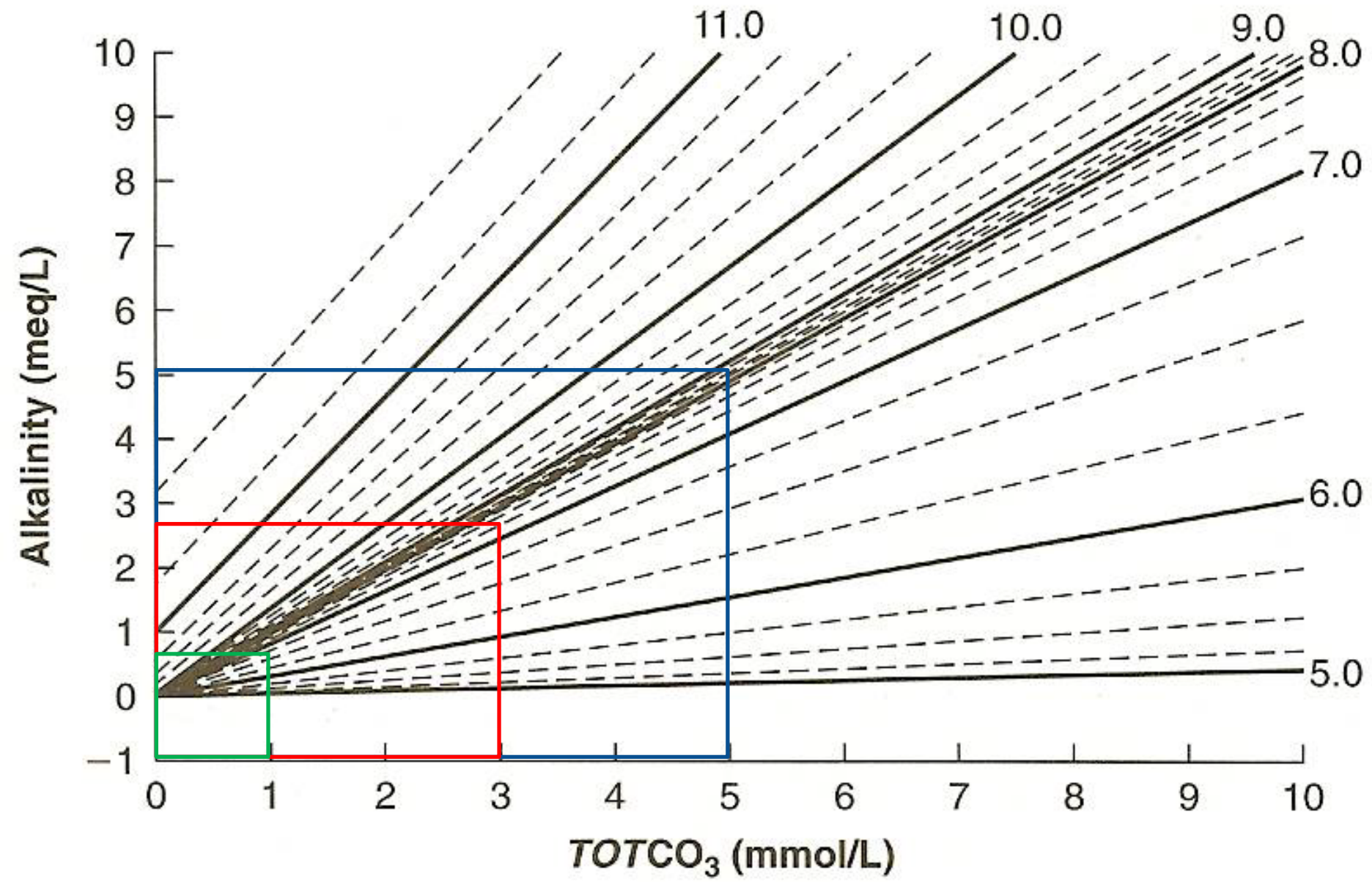
More practice

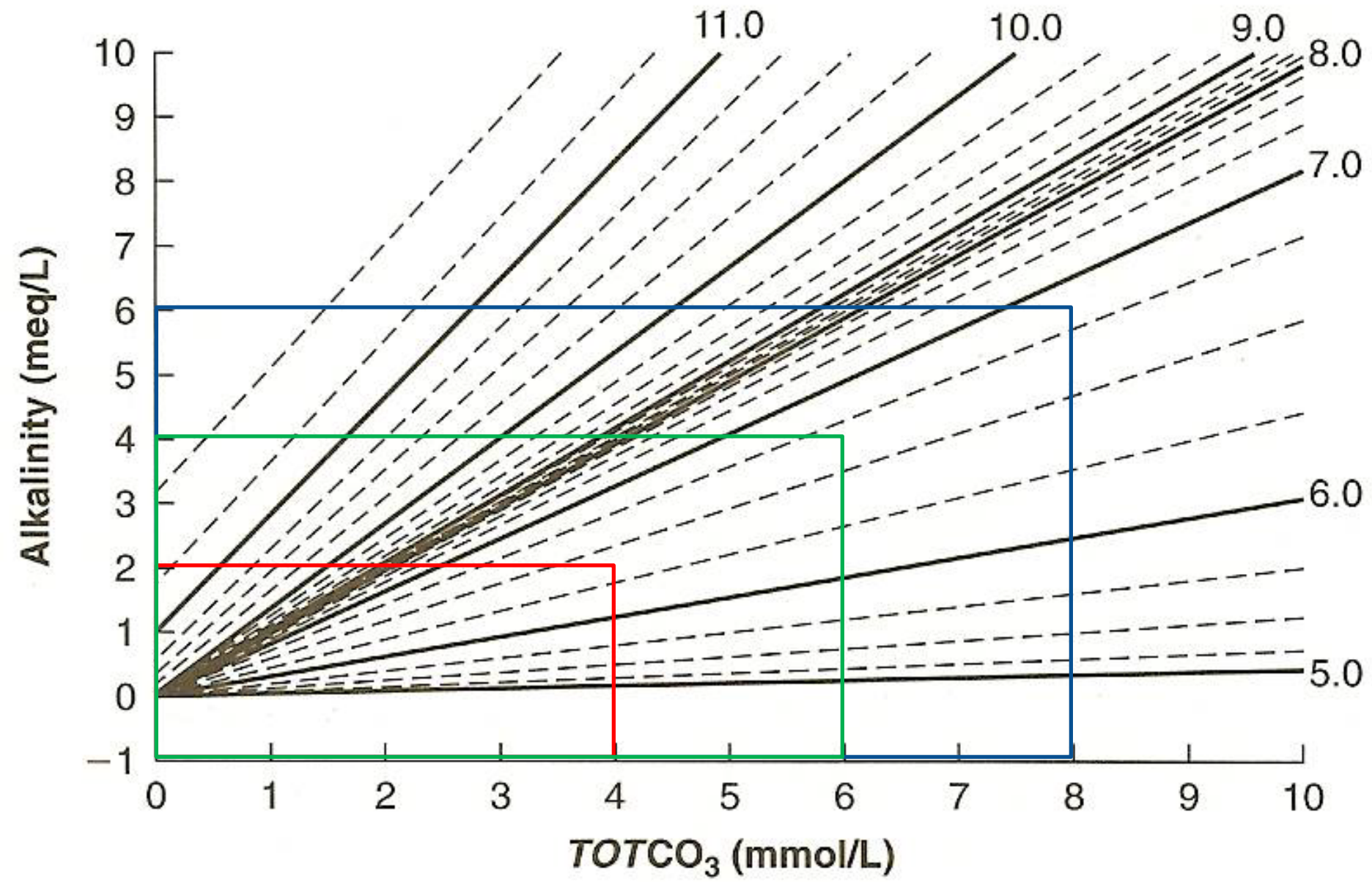
- What is the pH of a blend of the following:
 - 1 MGD of pH 6.5 water with a Alkalinity of 50 mg/L
 - 1 MGD of pH 8.5 water with an Alkalinity of 500 mg/L

$$Alk = (\alpha_1 + 2\alpha_2) \frac{K_H P_{CO_2}}{\alpha_0} + [OH^-] - [H^+]$$

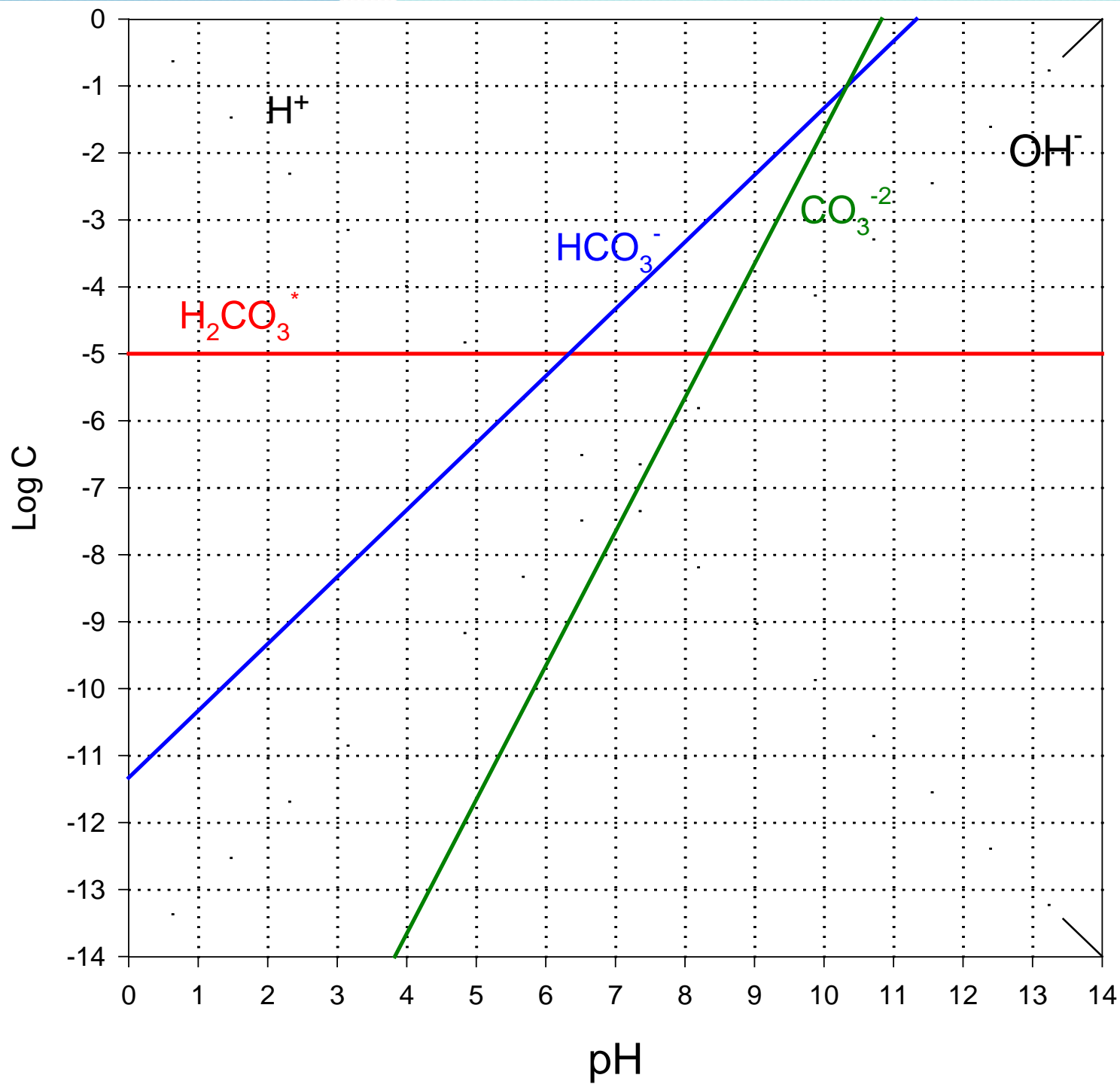
$$Alk = (\alpha_1 + 2\alpha_2) C_T + [OH^-] - [H^+]$$

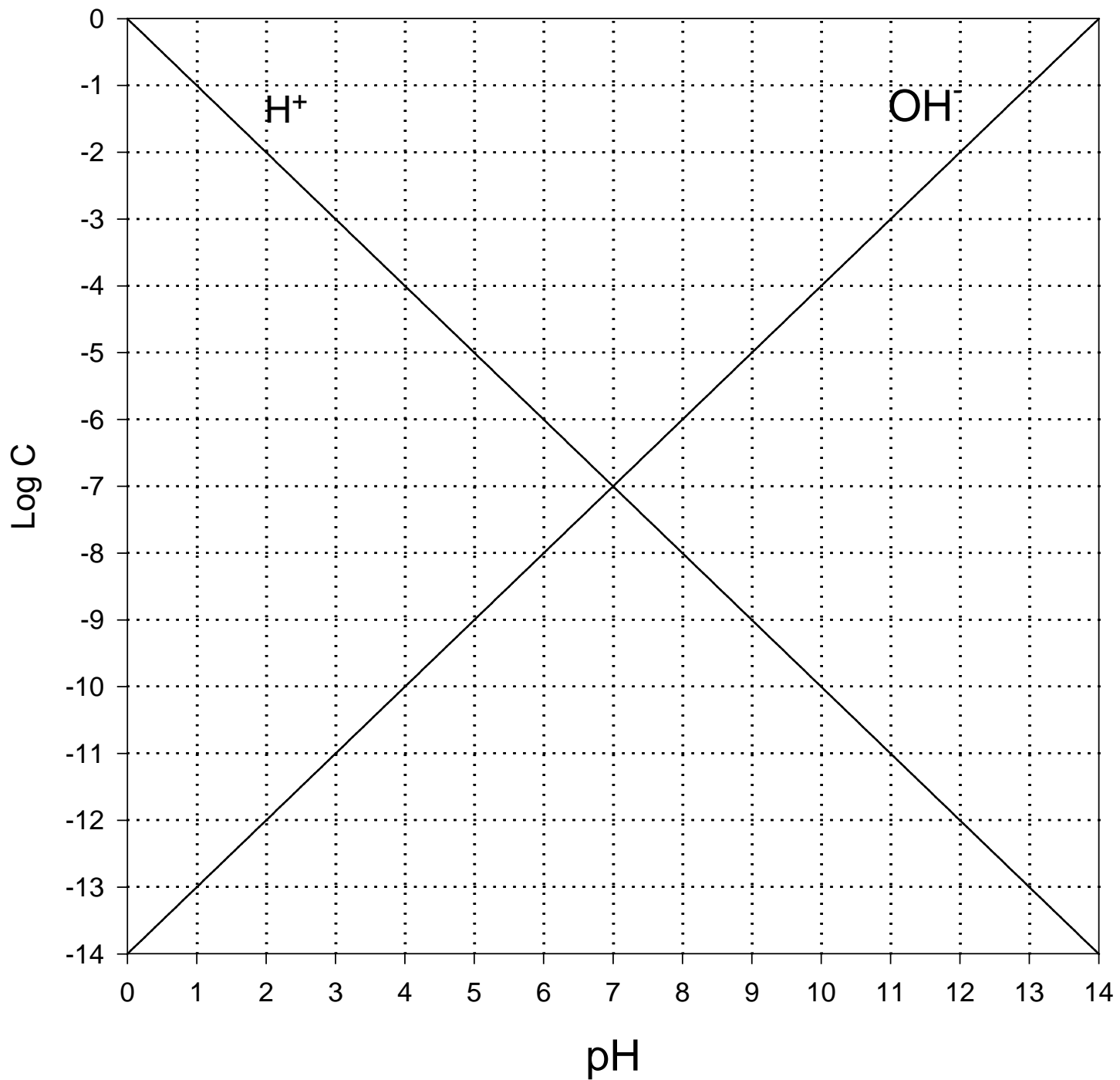






Open





- To next lecture