

Answer on Question #52491, Chemistry, Inorganic Chemistry

Question: a.) calculate the pH of a 0.025 Nitric acid solution

b.) calculate the pH of a 0.10 NaOH

c.) a solution prepared by dissolving 0.28 g of lime (CaO) in 1.00 L water to make limewater (Ca(OH)₂)

Answer:

a) Nitric acid is fully ionized:

$$[H^+] = 0.025M$$

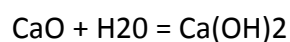
$$pH = -\log 0.025 = 1.6$$

b) $[OH^-] = 0.1M$

$$pOH = -\log 0.1 = 1$$

$$pH = 14 - 1 = 13.$$

c) The number of moles of CaO = $0.28/56 = 0.005$ moles



The number of moles of Ca(OH)₂ will be 0.005 moles.

1 moles of Ca(OH)₂ will have 2 moles of OH⁻ ions, so the number of moles of OH⁻ = $2 * 0.005 = 0.01$

The concentration of OH⁻ will be 0.01M

$$pOH = -\log 0.01 = 2$$

$$pH = 14 - 2 = 12.$$