**A1**

Berechnen Sie die pH-Werte von:

a) Salzsäure c0(HCL) = 0,001mol/l -> starke Säure

 pH = -lg [c0(HCL)]

 pH = -lg (0,001)

 pH = - (-3)

 pH = 3

b) Kalilauge c0(KOH) = 0,01mol/l -> starke Base

 pOH = -lg [c0(KOH)]

 pOH = -lg (0,01)

 pOH = - (-2)

 pOH = 2

 pH = pKw - pOH

 pH = 14 – 2

 pH = 12

c) Kalkwasser c0(Ca(OH)2) = 0,0005mol/l -> starke Base

 pOH = -lg [c0(Ca(OH)2)]

 pOH = -lg (0,0005)

 pOH = - (-3,30)

 pOH = 3,3

 pH = pKw - pOH

 pH = 14 - 3,3

 pH = 10,7

d) Essigsäure c0(HAc) = 0,1mol/l -> schwache Säure

 pH = $\frac{1}{2}$ × (pks-lg[c0(HAc)]

 pH = $\frac{1}{2}$ × (4,75-lg(0,1))

 pH = $\frac{1}{2}$ × (4,75-(-1))

 pH = $\frac{1}{2}$ × (5,75)

 pH = 2,875

e) Ammoniaklösung c0(NH3) = 1mol/l -> schwache Base

 pOH = $\frac{1}{2}$ × (pkb-lg[c0(NH3)]

 pOH = $\frac{1}{2}$ × (4,75-lg(1))

 pOH = $\frac{1}{2}$ × (4,75-0)

 pOH = $\frac{1}{2}$ × (4,75)

 pOH = 2,38

 pH = pkw – pOH

 pH = 14 – 2,38

 pH = 11,62