14. 0.488 g of solid $Mg(OH)_2$ are dissolved in 25.0 mL of 3.0 M HNO_3 solution. After the reaction is complete the solution remains acidic.

a) Write a balanced equation for the reaction that has occurred.

-> 2HzO + Mg(NO3)2 $M_q(OH)_2 + 2HNO_2$ b) If you assume the volume of the solution remains constant at 25.0 mL after the reaction is complete, identify the following concentrations: Molar masses that may prove useful: $Mg(OH)_2 = 58.309 g/mol$, $HNO_3 = 63.0128$ $g/mol, H_2O = 18.0153 g/mol$ 3.0 The final concentration of NO₃ Μ The final concentration of Mg^{+2} \bigcirc , 34 \xrightarrow{M} (or \bigcirc , 335 M)· 438g mgGHJrom Notesale.co.uk The final concentration of H^+ Priol Page 74 10 mol ma (04) = 8.37×10⁻³ mol mg⁺² 0.335 M 3.0 mol HDO3 , 025L = , 075 mol HNO3 = ,075 mol H+ (Start) Ht consumed : 8.37×10⁻³mol mg(OH) 2 mol HNO3 [1 mol H⁺] [mol mg(OH2 [1 mol HNO3]

0.075-0.01674 = 0.05826 = 2.33 M Consumed