Skies on Fire: Acid Rain & Acid-Base Reactions

https://www.youtube.com/watch?v=Ms4v0Ekvyuw

1. In the video a researcher measures tap water and acidic river water using a digital pH gauge. Students from John Abbot recently did a similar study on ground water from Ile Perrot. The tap water had a pH of 7 and the ground water had a pH of 4.

   a) Which water source was more acidic? _____

   b) How much more acidic was it compared to the other water source?

   c) Other than a digital pH gauge, what kind of tool could be used to find the pH of a solution?

2. a) The chemical formula for most acids is fairly similar, what do most acids have in common when it comes to their chemical formula?

   b) We learned about a special exception to this rule, what is it?

3. Acid rain is typically acidic because of nitrogen compounds released by industrial buildings. Most of the acid in acid rain is nitric acid (HNO_3). When it hits the ground the acid rain reacts with chemicals such as calcium hydroxide ($Ca(OH)_2$) .

   a) What are chemicals belonging to the group including calcium hydroxide called?

   b) What type of reaction is this? Justify your answer.

   c) What would the chemical formula for the reaction between nitric acid and calcium hydroxide look like?

   d) What is the law of conservation of mass?

   e) How much calcium hydroxide would react with 126g of nitric acid to produce 36g of water and 164g of calcium nitrate ($Ca(NO_3)_2$)?