Honors – Acid and Base Properties Homework

1) Using the Arrhenius definition of a base, explain how LiOH qualifies as a base.

2) Using the Brønsted-Lowry definition of a base, explain how LiOH qualifies as a base.

3) Using the Lewis definition of a base, explain how LiOH qualifies as a base.

4) Determine the Brønsted-Lowry conjugate acid-base pairs in each of the following equations:

- $HNO_3 + NH_3 \leftrightarrows NO_3^- + NH_4^+$

- $Br^- + H_3O^+ \leftrightarrows HBr + H_2O$

- $C_2H_3O_2H + LiOH \leftrightarrows LiC_2H_3O_2 + H_2O$

- $H_3PO_4 + H_2O \leftrightarrows H_2PO_4^- + H_3O^+$

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5) Name each of the following compounds and indicate whether they're Arrhenius acids, bases, or neutral compounds.

a) $Pb(OH)_2$ _____

b) $LiNO_3$ _____

c) H_3PO_4 _____

d) H_2S _____

e) NH_3 _____

6) From the information given, determine whether the following solutions would most likely be acidic, basic, or neutral:

a) The solution has a salty flavor: _____

b) The solution makes your hands feel slippery: _____

c) The solution smells like broccoli: _____

d) The solution conducts electricity: _____

e) The solution can clean the tops of stoves: _____

7) What is the difference between the H_3O^+ and H^+ ions, if any?

8) From looking at the chemical formula of a compound, how can you tell whether it's an acid or a base?