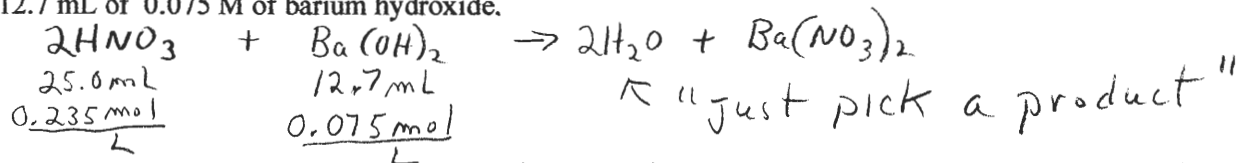


1. (8 Pts) Determine concentration of the excess reactant when 25.0 mL of 0.235 M nitric acid is reacted with 12.7 mL of 0.075 M of barium hydroxide.

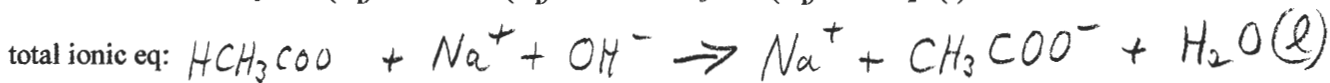
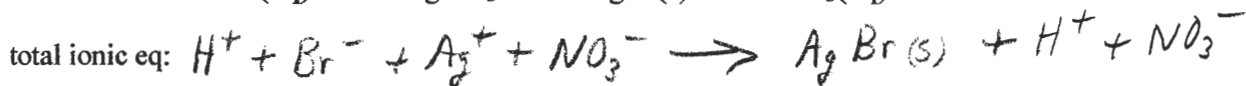
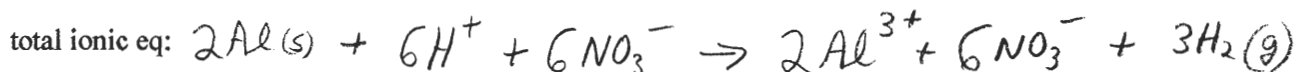
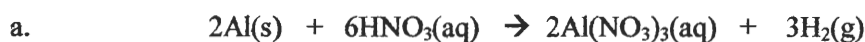


Based on HNO_3 : $\frac{25.0 \text{ mL HNO}_3}{1000 \text{ mL HNO}_3} \times \frac{0.235 \text{ mol}}{1 \text{ L HNO}_3} \times \frac{2 \text{ mol H}_2\text{O}}{2 \text{ mol HNO}_3} = 0.005875 \text{ mol H}_2\text{O}$

Based on $\text{Ba}(\text{OH})_2$: $\frac{12.7 \text{ mL Ba}(\text{OH})_2}{1000 \text{ mL Ba}(\text{OH})_2} \times \frac{0.075 \text{ mol}}{1 \text{ L Ba}(\text{OH})_2} \times \frac{2 \text{ mol H}_2\text{O}}{1 \text{ mol Ba}(\text{OH})_2} = 0.001905 \text{ mol H}_2\text{O} \leftarrow \text{theoretical}$

Now using difference : $\frac{0.00397 \text{ mol H}_2\text{O}}{2 \text{ mol H}_2\text{O}} \times \frac{2 \text{ mol HNO}_3}{37.7 \times 10^{-3} \text{ L}} = \frac{0.105 \text{ mol HNO}_3}{\text{L}}$

2. (12 Pts) For the following reactions, write the total ionic equation and the net ionic equation.



3. (5 Pts) Give formulas for the following:

a. two strong bases _____

b. one weak acid _____

c. two strong acids. _____