

Name: \_\_\_\_\_

Blk: \_\_\_\_\_ Date: \_\_\_\_\_

**Chemistry 12**  
**ACID BASE PART II Lesson # 18 CONTINUED**  
**THERE ARE THREE TYPES OF TITRATIONS:**

- 1.
- 2.
- 3.

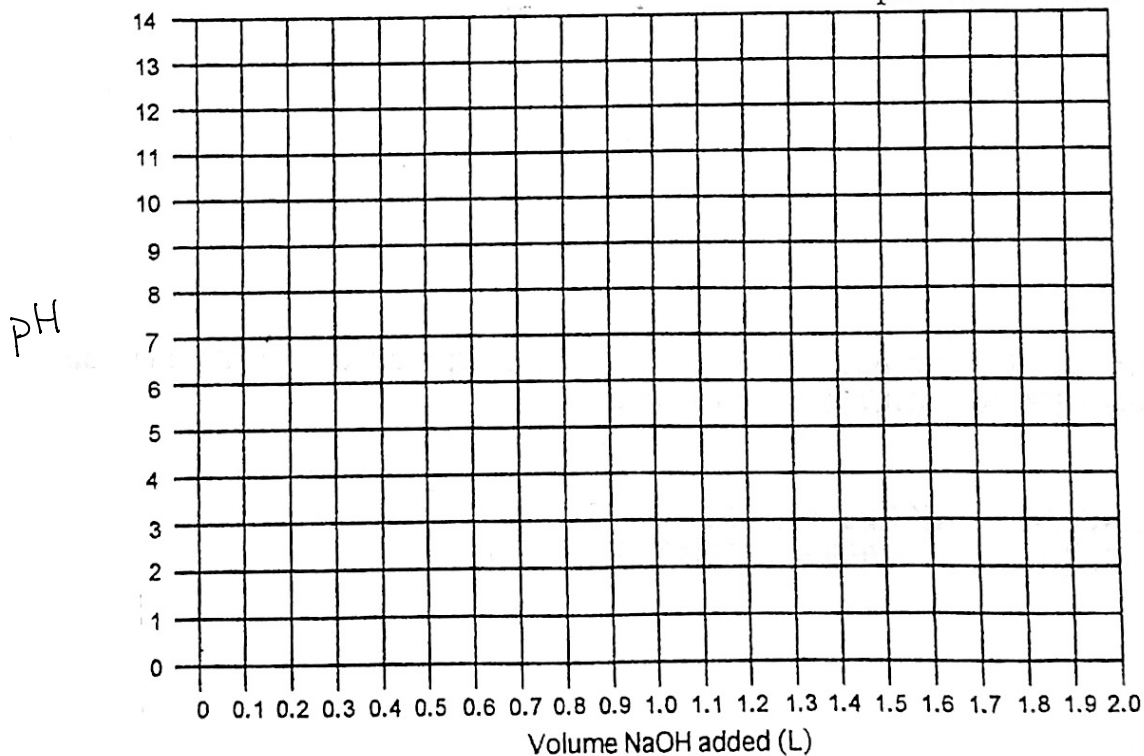
In a chemistry laboratory a titration between HCl and NaOH was carried out and the following DATA was collected. Use this data to graph "pH vs Volume of Base".

Volume of NaOH added (L)	[H <sup>+</sup> ] after NaOH addition	pH	pOH
0.0000	1.000	0.00	14.00
0.2500	0.600	0.22	13.88
0.5000	0.333	0.48	13.62
0.7500	0.143	0.85	13.15
0.9000	5.26 x 10 <sup>-2</sup>	1.28	12.72
0.9900	5.03 x 10 <sup>-3</sup>	2.30	11.70
0.9990	5.00 x 10 <sup>-4</sup>	3.30	10.70
0.9999	5.00 x 10 <sup>-5</sup>	4.30	9.70
1.0000	1.00 x 10 <sup>-7</sup>	7.00	7.00
1.0001	5.00 x 10 <sup>-5</sup>	9.70	4.30
1.0010	5.00 x 10 <sup>-4</sup>	10.70	3.30
1.0100	4.98 x 10 <sup>-3</sup>	11.70	2.30
1.1000	4.76 x 10 <sup>-2</sup>	12.68	1.32
1.2500	0.111	13.05	0.95
1.5000	0.200	13.30	0.70
1.7500	0.273	13.44	0.56
2.0000	0.333	13.52	0.48

a. At what pH range is the pH changing most rapidly?

b. Was the solution acidic, basic or neutral at the equivalence point?

c. A chem student choose phenolphthalein as the indicator for this titration. Why did the student get good results even though the pKa value differs from the pH value which "should exist"?



The graph that you have just plotted is typical of all \_\_\_\_\_ titration curves. The Equivalence point is observed \_\_\_\_\_.

To select an **INDICATOR** for any type of titration the \_\_\_\_\_ should coincide with the \_\_\_\_\_ of the titration.

For a **STRONG ACID/STRONG BASE** titration the equivalence point is reached at a pH of \_\_\_\_\_, therefore the following indicators are acceptable:

Below is the **TITRATION CURVE** for a **weak acid/ STRONG BASE** titration:

The equivalence point on the above graph is \_\_\_\_\_. Appropriate Indicators to use for a weak acid/STRONG BASE titatration include:

Below is the **TITRATION CURVE** for a **weak base/ STRONG ACID** titration:

The equivalence point on the above graph is \_\_\_\_\_. Appropriate Indicators to use for a weak base/STRONG ACID titatration include: