Lab Instructor:_____   Name:_____

Write the balanced equation for the reaction:

DATA

	Trial 1	Trial 2	Trial 3	Trial 4
1. Mass of dry Erlenmeyer flask				
2. Volume of vinegar used				
3. Mass of flask with vinegar				
4. Mass of vinegar				
5. Initial buret reading				
6. Final buret reading				
7. Volume of NaOH used				
8. Molarity of NaOH (from bottle)				

CALCULATIONS (Show all calculation setups, including units)

Show work here	Answer
9. Moles of NaOH used in titration	Trial 1
	Trial 2
	Trial 3
	Trial 4
10. Moles of $HC_2H_3O_2$ used	Trial 1
	Trial 2
	Trial 3
	Trial 4

11. Molarity of acetic acid ($HC_2H_3O_2$) in vinegar	Trial 1
	Trial 2
	Trial 3
	Trial 4
	Average
12. Grams of acetic acid ($HC_2H_3O_2$) in vinegar sample	Trial 1
	Trial 2
	Trial 3
	Trial 4
13. Mass percent of acetic acid ($HC_2H_3O_2$) in vinegar	Trial 1
	Trial 2
	Trial 3
	Trial 4
	Average
	Mass % on bottle

Questions:

1.   How many milliliters of a 0.100 M NaOH solution are needed to neutralize 15.0 mL of 0.200 M H_3PO_4?

2.   If 24.7 mL of 0.250 M NaOH solution are needed to neutralize 19.8 mL of H_2SO_4 solution, what is the molarity of the H_2SO_4?

3.   25.0 g of 5.0 % (by mass) acetic acid solution are titrated with 0.300 M NaOH. What volume of NaOH will be needed to neutralize this sample?