Potentiometry Additional Problems

1. Graph the following potentiometric data. What is the equation of the line with error? Stock solution used is 210.0 ppm Cl^-. Total volume of each calibration standard is 100.0 mL.

volume stock soln (mL)	Potential (mV)
5.00	205
10.00	190
20.00	183
25.00	170
50.00	155

2. Using the data above, what is the concentration of chloride ion in a solution with a potential of 174 mV? with error?

3. A solution was made by dissolving 1.547 g sample in 100.0 mL. A 10.00 mL aliquot of this solution was diluted to 100.0 mL. The potential of the diluted sample was 185 mV. What is the %Cl in the sample? with error?

4. A series of nitrate standards were measured with potentiometry and graphed appropriately. Using molarity as the concentration unit, the equation of the line was

$$E = (69.9 \pm 0.8)pNO_3 + 299 \pm 8$$

If a 1.581 g sample dissolved to make 250.0 mL of solution had a potential of 385 mV, what is the concentration of nitrate in the sample? With error?

5. A series of copper(II) standards were measured potentiometrically and the results, using ppb as the concentration unit, were appropriately graphed to make the following line

$$E = (48.5 \pm 1.5)\log Cu + 859 \pm 39$$

What is the concentration of copper(II) ion in a solution with a potential of 945 mV? With error?

Solutions