Table 1: Part 1 Potentiometric Titration of a Dilute Unknown Acid

Volume of NaOH added (mL)	pH
0.00	2.12
2.00	2.11
4.00	2.17
6.00	2.23
8.00	2.32
10.00	2.39
12.00	2.48
14.00	2.57
16.00	2.67
18.00	2.77
20.00	2.89
22.00	3.02
24.00	3.18
26.00	3.38
28.00	3.71
30.00	4.72
30.23	5.33
30.50	6.07
30.75	6.80
31.00	9.23
31.25	9.99
31.50	10.37
31.75	10.65
32.00	10.86
32.25	11.00
34.25	11.52
36.30	11.71

Volume of NaOH added (mL)	pH
38.25	11.89
40.25	12.00
42.25	12.07
44.25	12.13
46.25	12.18
48.25	12.23

Table 2: Part 2 Titration of a More Dilute Unknown Acid

Volume of NaOH aded (mL)	pH
0.00	2.27
1.00	2.29
2.00	2.33
3.00	2.38
4.00	2.44
5.00	2.51
6.00	2.59
7.00	2.66
8.00	2.76
9.00	2.86
10.00	2.97
11.00	3.10
12.00	3.26
13.00	3.47
14.00	3.81
15.00	5.22
15.12	5.86
15.25	6.33
15.35	6.82
15.50	8.83
15.67	9.72
15.80	10.10
16.00	10.36
16.15	10.56
16.30	10.72
16.50	10.83
16.62	10.94

Volume of NaOH aded (mL)	pH
16.82	11.03
17.80	11.37
18.80	11.58
19.80	11.70
20.80	11.79
21.90	11.88
23.00	11.94

Table 3: Calculation Results

	Titration #1	Titration #2
Potentiometric Endpoint pH	7.59	7.39
Potentiometric Endpoint Volume (mL)	30.80	15.39
Visual Endpoint pH	5.33	8.83
Visual Endpoint Volume (mL)	30.23	15.50
Half-Equivalence Point pH	2.70	2.68
Half-Equivalence Point Volume (mL)	15.40	7.695
Concentration of Diluted Acid (M)	0.1810	0.09043
Concentration of Original Unknown Acid (M)	0.9049	0.9043
pKa	2.70	2.68
Ka	2.0*10^-3	2.1*10^-3