A 30.0 mL sample of 0.10 M hydrofluoric acid (HF, Ka = 6.8 x 10-4 ) is titrated to the equivalence point with 15.0 mL of 0.20 M sodium hydroxide (NaOH.)

a. Sketch the curve that results when this titration is conducted. Ensure that the shape of the curve and the pH values at the start of the titration, the halfway point, and the equivalence point are relatively accurate.

b. What is the pH at the halfway point in the titration? Explain.