Polyprotic Acid

$H_2SO_3 \leftrightarrows HSO_3^- + H^+ \quad K_{a1} = 1.4 \times 10^{-2}$

$HSO_3^- \leftrightarrows SO_3^{2-} + H^+ \quad K_{a2} = 6.5 \times 10^{-8}$

2 equivalents of base

0.10 M H_2SO_3

0.1 M NaOH

buffering regions

half-way point $\quad pH = pK_a$

$-\log 1.4 \times 10^{-2} = 1.85$

$-\log 6.5 \times 10^{-8} = 7.19$

1st equivalence point

$$\frac{1.84 + 7.19}{2} = 4.52$$

2nd equivalence point

conjugate base, SO_3^-