1. Calculate the pH of 500 mL of each of the following acids:
a) $1.0 \times 10^{-2} \mathrm{~mol} / \mathrm{L} \mathrm{HCl}(\mathrm{aq})$
b) $6.00 \mathrm{~mol} / \mathrm{L} \mathrm{HNO}_{2}(\mathrm{aq})$
c) $1.50 \mathrm{~mol} / \mathrm{L} \mathrm{H}_{2} \mathrm{SO}_{3}(\mathrm{aq})$
d) $6.8 \times 10^{-2} \mathrm{~mol} / \mathrm{L} \mathrm{HNO}_{3}(\mathrm{aq})$
e) $6.3 \times 10^{-1} \mathrm{~mol} / \mathrm{L} \mathrm{HF}(\mathrm{aq})$
2. A $0.80 \mathrm{~mol} / \mathrm{L}$ solution of an unknown acid, $\mathrm{HX}(\mathrm{aq})$, has a pH of 3.75.Calculate the $\mathrm{K}_{\mathrm{a}}$, the acid ionization constant.
3. Calculate the pH of a solution containing $0.25 \mathrm{~mol} / \mathrm{L}$ of an acid with an acid ionization constant $\left(\mathrm{K}_{\mathrm{a}}\right)$ of $3.2 \times 10^{-6} \mathrm{~mol} / \mathrm{L}$.
