Quiz Chapter 13 & 14 − Question One

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\begin{aligned}
K_b &= 5 \cdot 10^{-3} \\
.4 \cdot .012 &= .0048[\text{mol}] \\
.05 \cdot .237 &= .01185[\text{mol}] \\
.01185 - .0048 &= .00705[\text{mol}] \\
\frac{.0048}{.062} &= .0774[\text{M}] \\
\frac{.00705}{.062} &= .1137[\text{M}] \\
[\text{OH}^-] &= \frac{(5 \cdot 10^{-3})(.1137)}{.0774} \\
&= .007345[\text{M}] \\
\text{pH} &= 14 + \log_{10}(.007345) = 11.866
\end{aligned} \tag{1}
$$