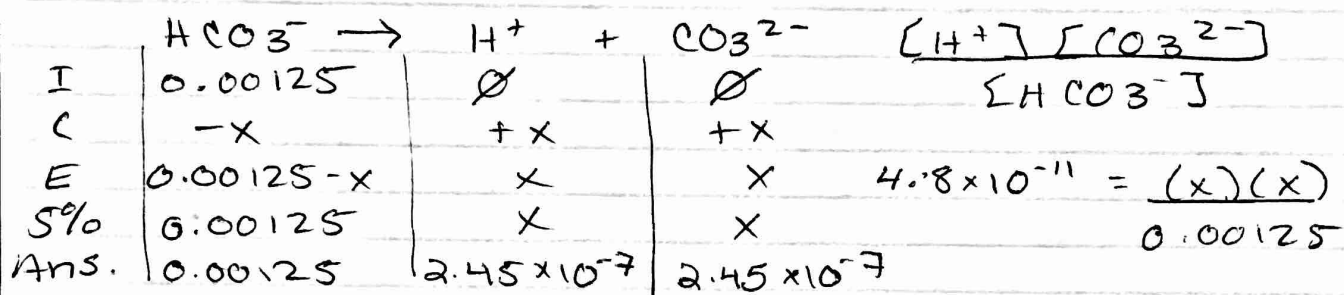
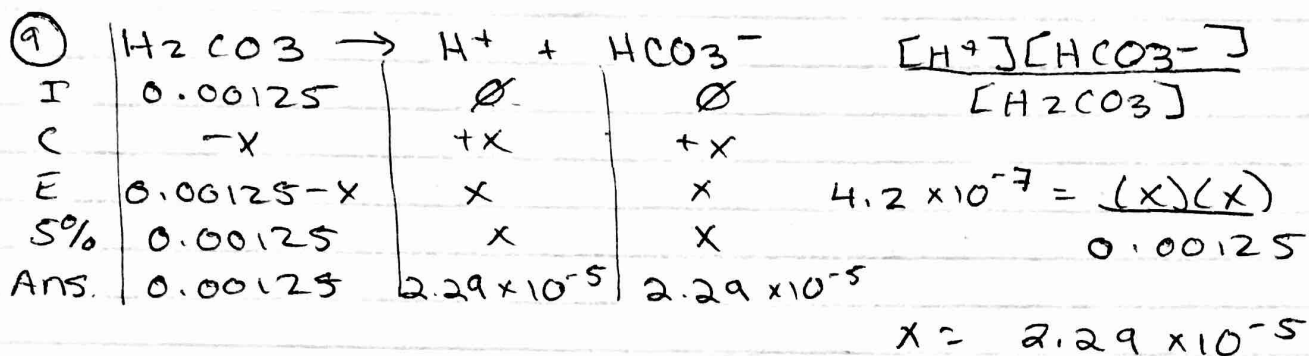


OPTIONAL Q's



total $[\text{H}^+] = (2.29 \times 10^{-5}) + (2.45 \times 10^{-7})$
 $= 2.31 \times 10^{-5} \text{ M}$

$x = 2.45 \times 10^{-7}$

$\text{pH} = -\log(2.31 \times 10^{-5}) = \boxed{4.64}$

*

$0.00125 + (2.45 \times 10^{-7}) = 1.25 \times 10^{-3} \quad \text{pH} = -\log(1.25 \times 10^{-3})$

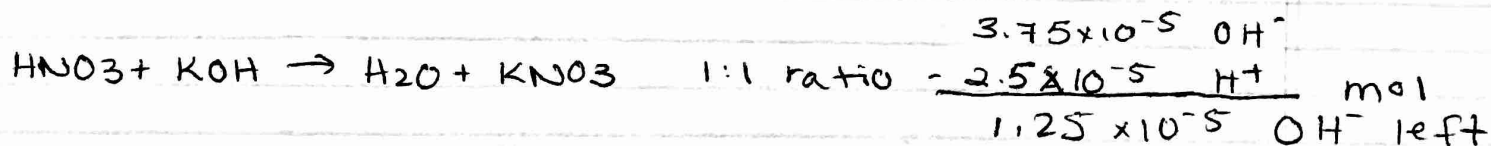
Q says to do

$\boxed{2.90}$

Strong + ICE !!! so this answer is based on that but technically that is the wrong way to do it. will fix next year!

10 $\frac{20 \text{ mL } | 1 \text{ L}}{1000 \text{ mL } | 1 \text{ L}} \quad 0.00125 \text{ mol HNO}_3 = 2.5 \times 10^{-5} \text{ mol HNO}_3$

$\frac{30 \text{ mL } | 1 \text{ L}}{1000 \text{ mL } | 1 \text{ L}} \quad 0.00125 \text{ mol KOH} = 3.75 \times 10^{-5} \text{ mol KOH}$



total volume = 20 + 30 = 50 mL = 0.05 L

$[\text{OH}^-] = \frac{1.25 \times 10^{-5} \text{ mol}}{0.05 \text{ L}} = 2.5 \times 10^{-4} \text{ M} \quad \text{pOH} = -\log(2.5 \times 10^{-4})$
 $= 3.60$

$\text{pH} = 14 - \text{pOH} = 14 - 3.6 = \boxed{10.39}$