Answer on Question #70901, Chemistry / General Chemistry :

What is the concentration (in molarity) of a 25.0 mL CH_3COOH solution that requires 30.50 mL of the NaOH solution?

Solution.

$V\left(CH_3COOH\right)=25.0ml$

$V\left(NaOH\right)=30.50ml$

$C\left(NaOH\right)=1M$

$C\left(CH_3COOH\right)-?$

$CH_3COOH+NaOH\rightarrow CH_3COONa+H_2O$

We use the law of equivalents:

$$C\left(CH_3COOH\right)\cdot V\left(CH_3COOH\right)=C\left(NaOH\right)\cdot V\left(NaOH\right)$$

And:

$$C\left(CH_3COOH\right)=\frac{C\left(NaOH\right)\cdot V\left(NaOH\right)}{V\left(CH_3COOH\right)}$$

And:

$$C\left(CH_3COOH\right)=\frac{1M\cdot 30.50ml}{25.0ml}$$

$$C\left(CH_3COOH\right)=1.22M$$

Answer: $C\left(CH_3COOH\right)=1.22M$ **.**