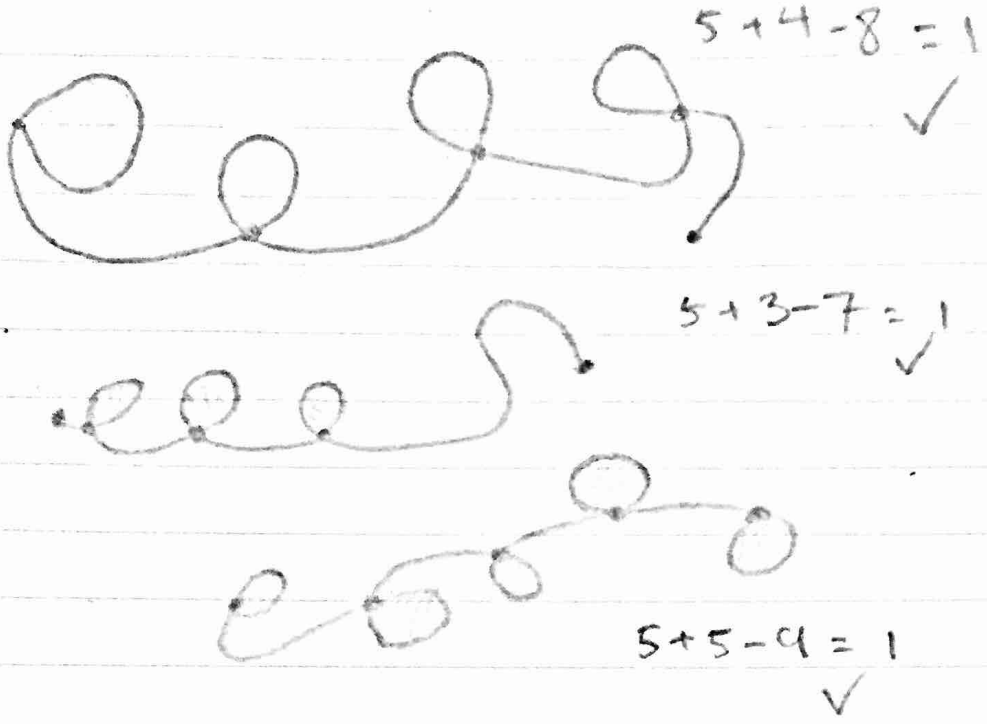
$n+r-c=1$



Prove: $n+r-c=1$ for all lines..

Base:  $n=3, r=1, e=3$

Assume for n, r, e, $n+r-e=1$

Add Region $\equiv r+1, e+1$
$\therefore n+r-e=1$

Add Edge $\equiv e+1, n+1$
$\therefore n+r-e=1$

Add node $\equiv n+1, r+1, e+2$
$\therefore n+r-c=1$
OR $n+1, e+1$
$\therefore n+r-c=1$

Q.E.D.