Problem Prove that $\bigcirc \neq$ (trefoil).

Proof Define an "invariant"

$$I(D) := \left| \begin{array}{l} D \text{ can be coloured } {\color{red}R}{\color{green}G}{\color{blue}B} \\ \text{so that all colours are} \\ \text{used and every crossing} \\ \text{is either mono- or tri-chromatic} \end{array} \right|$$

$$\in \{ \text{True, False} \}$$

$\bigcirc \rightarrow$ False   (trefoil) $\rightarrow$ True

$\xrightarrow{R1}$

$\xleftarrow{R2}$

$\downarrow R3$