

The original `eqnarray*` would give this (we have to split it in separate lines):

$$\begin{array}{rcl} A & = & B, \\ \sin x & = & \cos x, \\ \left(\begin{array}{cc} 1 & 2 \\ 3 & 4 \end{array}\right) = 0 & \left| \begin{array}{c} \Longleftrightarrow \\ \neq \end{array} \right| & \text{FALSE}, \\ C & \Longleftrightarrow & D, \\ \text{foo} & = & \text{bar}. \end{array}$$

Proof. `eqnarray*` works in the same way as `align*`, even in `proof`:

$$\begin{array}{rcl} A = B, & \sin x = \cos x, & (1) \\ \left(\begin{array}{cc} 1 & 2 \\ 3 & 4 \end{array}\right) = 0 & \left| \begin{array}{c} \Longleftrightarrow \\ \neq \end{array} \right| \text{FALSE}, & C \Longleftrightarrow D, \quad \text{foo} = \text{bar}. \quad \square \end{array}$$

Proof. And the original `align*`:

$$\begin{array}{rcl} A = B, & \sin x = \cos x, & \\ \left(\begin{array}{cc} 1 & 2 \\ 3 & 4 \end{array}\right) = 0 & \left| \begin{array}{c} \Longleftrightarrow \\ \neq \end{array} \right| \text{FALSE}, & C \Longleftrightarrow D, \quad \text{foo} = \text{bar}. \quad \square \end{array}$$