Solution (#1592) We saw that the DE

$$\sin x \frac{\mathrm{d}y}{\mathrm{d}x} = y \ln y.$$

had solutions

$$y = \exp\{A \tan(x/2)\}$$

where A is another constant and $-\pi < x < \pi$.

Note that all these solutions satisfy $y(0) = 1$. This is not surprising as setting $x = 0$ and $y = 1$ into the DE simplify gives $0 = 0$, the DE does not specify anything about $y'(0)$. Also note that $y(0) = y_0 > 0$ would lead to a contradiction from the DE for any y_0 other than $y_0 = 1$.