

Pr:  $xy' = y(\ln y - \ln x), y(1) = 1$

$$y' = \frac{y}{x} \ln \frac{y}{x}$$

substit  $u = \frac{y}{x}$

$$y = ux$$

$$y' = u'x + u$$

$$u'x + u = u \cdot \ln u$$

$$\frac{dx}{x \cdot u(\ln u - 1)}$$

$$\frac{du}{dx} x = u \cdot \ln u - u$$

$$\left. \begin{array}{l} x \neq 0 \\ u \neq 0 \\ u \neq 1 \end{array} \right\}$$

$$\frac{du}{u(\ln u - 1)} = \frac{dx}{x}$$

$$\ln|\ln u - 1| = \ln|x| + \ln C, C \in \mathbb{R}^+$$

$$\ln u - 1 = C \cdot x$$

$$\ln \frac{y}{x} = C^*x + 1$$

$$\frac{y}{x} = e^{C^*x + 1}$$

$$y = x \cdot e^{C^*x + 1}$$

$$y(1) = 1: 1 = 1e^{C^* + 1}$$

$$0 = C^* + 1 \Rightarrow C^* = -1$$

$$y = x \cdot e^{-x+1}$$

$$\frac{y}{x} = e$$

$$y = e \cdot x$$

$$x(e \cdot x)' = ex \ln \frac{ex}{x}$$

$$ex = ex$$

$$\Rightarrow y = e \cdot x \text{ pro } x > 0$$

