$$0 < y < 1: \quad \frac{dy}{dx} = \frac{1 - y^2}{y}$$

$$y\frac{dy}{dx} = e^{y^2}: \quad y\left(0\right) = 1: \quad y = \sqrt{\log \frac{1}{1/e - 2x}}$$

$$v = y^2 \Longrightarrow dv = 2ydy \Longrightarrow 2dx = 2y\, e^{-y^2} dy = e^{-v}\, dv$$

$$2x - C = \int e^{-v}\, dv = -e^{-v} \Longrightarrow -v = \log\left(C - 2x\right) \Longrightarrow v = \log \frac{1}{C - 2x} \Longrightarrow y = \sqrt{\log \frac{1}{C - 2x}}$$

$$1 = y\left(0\right) = \sqrt{\log \frac{1}{C}} \Longrightarrow C = \frac{1}{e}$$

$$\frac{dy}{dx} = xy: \quad \text{AWP } y\left(x_0\right) = y_0 \begin{cases} > 0 \\ = 0 \\ < 0 \end{cases}$$

$$\frac{dy}{dx} = \frac{xe^x}{y}: \quad y\left(0\right) = -5$$

$$x\frac{dy}{dx} = 2\sqrt{y - 1}: \quad \text{allg Lsg}$$

$$\frac{dy}{dx} = \cos x\, e^y$$

$$dx \cos x = dy\, e^y \Longrightarrow e^y = \int dy\, e^y = \int dx \cos x = \sin x + C$$

$$\frac{dy}{dx} = \left(a^2 + x^2\right)\left(b^2 + y^2\right)$$

$$3\frac{dy}{dx} = \frac{2 + \sin x}{\left(y - 1\right)^2} \Longrightarrow \text{ allg Lsg } / y\left(0\right) = 2$$