$$ {}^{x:y}P\,dx + {}^{x:y}Q\,dy = 0 $$

$$ \frac{\partial P}{\partial y} = \frac{\partial Q}{\partial x} $$

$$ {}^{x:y}\daleth = \int_{ds}^{x}\int_{dt}^{y} {}^{s:t}\overgroup{\frac{\partial P}{\partial y}} = \int_{ds}^{x}\int_{dt}^{y} {}^{s:t}\overgroup{\frac{\partial Q}{\partial x}} $$

$$ {}^{x:y}\overgroup{\frac{\partial \daleth}{\partial x}} = {}^{x:y}P: \qquad {}^{x:y}\overgroup{\frac{\partial \daleth}{\partial y}} = {}^{x:y}Q $$

$$ \frac{\partial \daleth}{\partial x} = \frac{\partial}{\partial x}\int_{ds}^{x}\int_{dt}^{y} {}^{s:t}\overgroup{\frac{\partial Q}{\partial x}} = \int_{dt}^{y} {}^{x:t}\overgroup{\frac{\partial Q}{\partial x}} = \int_{dt}^{y} {}^{x:t}\overgroup{\frac{\partial P}{\partial y}} = {}^{x:y}P $$

$$ \frac{\partial \daleth}{\partial y} = \frac{\partial}{\partial y}\int_{dt}^{y}\int_{ds}^{x} {}^{s:t}\overgroup{\frac{\partial P}{\partial y}} = \int_{ds}^{x} {}^{s:y}\overgroup{\frac{\partial P}{\partial y}} = \int_{ds}^{x} {}^{s:y}\overgroup{\frac{\partial Q}{\partial x}} = {}^{x:y}Q $$

$$ {}^{x:{}^{x}\llcorner}\daleth = C $$

$$ 2xydx + \left(x^2 + 1\right)dy = 0 $$

$$ (2x + y)\,dx + (x - 2y)\,dy = 0 $$

$$ \left(x^{x+y}\mathfrak{c} + {}^{x+y}\mathfrak{s}\right)dx + x\,{}^{x+y}\mathfrak{c}\,dy = 0 $$

$$ y\,e^{xy}\,dx + (1 + xe^{xy})\,dy = 0 \underset{\text{ex}}{\Longrightarrow} e^{xy} + y = C \text{ implicit} $$

$$ 2x\,{}^{3y}\mathfrak{s}\,dx + 3\,x^2\,{}^{3y}\mathfrak{c}\,dy = 0 \overset{\text{sep}}{\underset{\text{ex}}{\Longrightarrow}} x^2\,{}^{3}\mathfrak{s}\,y = C $$

$$ \underbrace{2x - \frac{y}{x^2}}\,dx + \frac{dy}{x} = 0 \underset{\text{ex}}{\Longrightarrow} x^2 + \frac{y}{x} = C \Rightarrow y = x\,\undergroup{C - x^2} \text{ explicit} $$

$$ (e^{xy}\mathfrak{c} + 2\,(x-y))\,dx = (e^{xy}\mathfrak{s} + 2\,(x-y))\,dy \underset{\text{ex}}{\Longrightarrow} e^{x}\,{}^{y}\mathfrak{c} + \overgroup{x-y}^{2} = C \underset{y\,(0)\,=\,\pi}{\Longrightarrow} C = \pi^2 - 1 $$

$$ y' = -\frac{y^{y}\mathfrak{c} + 2xe^{y}}{{}^{x}\mathfrak{s} + x^2e^{y} + 2} \underset{\text{ex}}{\Longrightarrow} y\,{}^{x}\mathfrak{s} + x^2\,e^{y} + 2y = C $$

$$\underbrace{e^x + y^2 x}\, dx + x^2\, y dy = 0 \underset{\text{ex}}{\Longrightarrow} e^x + \frac{x^2 y^2}{2} = C \underset{y\,(1)\,=\,0}{\Longrightarrow} C = e \Longrightarrow y \underset{0\,<\,x\,\leqslant\,1}{=} \frac{\sqrt{2\,(e - e^x)}}{x}$$

$$\underbrace{\frac{y}{x} + 6x}\, dx + \underbrace{{}^{x}\mathfrak{o} - 2}\, dy = 0 \underset{y\,(e)\,=\,1}{\overset{\text{ex}}{\Longrightarrow}} y = \frac{3e^2 - 1 - 3x^2}{{}^{x}\mathfrak{o} - 2}$$

$$e^{y^2} + 2 + \left(2xye^{y^2} - 4^{y}\mathfrak{c}\right) y' = 0 \underset{\text{ex}}{\Longrightarrow}$$

$$\left(xy^2 - 3\right) dx + \underbrace{x^2 y + 2y}\, dy = 0 \underset{\text{ex}}{\Longrightarrow}$$

$$\underbrace{2xy^2 + 2y} + \underbrace{2x^2 y + 2x + y}\, y' = 0 \underset{\text{ex}}{\Longrightarrow}$$