

$$3. \frac{dx}{dt} = x - y$$

$$\frac{dy}{dt} = x^2 + y^2 - 1$$

$$x - y = 0, \quad x^2 + y^2 - 1 = 0$$

$$x = y \Rightarrow x^2 + x^2 - 1 = 0$$

$$2x^2 - 1 = 0$$

$$x^2 = \frac{1}{2}$$

$$x = \pm \frac{1}{\sqrt{2}}$$

$$y = \pm \frac{1}{\sqrt{2}}$$

$$\text{ODP.: } \left(\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}\right), \left(-\frac{1}{\sqrt{2}}, -\frac{1}{\sqrt{2}}\right)$$

$$4. \frac{dx}{dt} = y - 1$$

$$\frac{dy}{dt} = x + y + 5$$

$$y - 1 = 0, \quad x + y + 5 = 0$$

$$y = 1 \Rightarrow x + 1 + 5 = 0$$

$$x = -6$$

$$\text{ODP.: } (-6, 1)$$

$$5. \frac{dx}{dt} = x^2 - 2xy$$

$$\frac{dy}{dt} = 3xy - y^2$$

$$\begin{cases} x^2 - 2xy = 0 \\ 3xy - y^2 = 0 \end{cases} \Rightarrow \begin{cases} x^2 - 2xy = 0 \\ x = \frac{y}{3} \end{cases}$$

$$\left(\frac{y}{3}\right)^2 - 2 \cdot \frac{y}{3} \cdot y = 0$$

$$\frac{y^2}{9} - \frac{2y^2}{3} = 0$$

$$-\frac{5y^2}{9} = 0$$

$$\text{ODP.: } (0, 0)$$

$$y = 0$$

$$x = 0$$

$$6. \frac{dx}{dt} = y^2 - 3y + 2$$

$$\frac{dy}{dt} = (x-1)(y-2)$$

$$y^2 - 3y + 2 = 0, \quad (x-1)(y-2) = 0$$

$$A = 1, \sqrt{A} = 1$$

$$x = 1 \vee y = 2$$

$$y_1 = 1$$

$$y_2 = 2$$

$$\text{ODP.: } (1, 1), (1, 2)$$