$f1 := y;$

$$y \tag{1}$$

$f2 := -4 \cdot \sin(x)$

$$-4 \sin(x) \tag{2}$$

$solve(\{f1, f2\}, \{x, y\});$

$$\{x = 0, y = 0\} \tag{3}$$

$f1 := (x, y) \rightarrow y;$

$$(x, y) \rightarrow y \tag{4}$$

$f2 := (x, y) \rightarrow -4 \cdot \sin(x);$

$$(x, y) \rightarrow VectorCalculus:-`-`(4 \sin(x)) \tag{5}$$

$Jm := Jacobian([f1(x, y), f2(x, y)], [x, y]);$

$$\begin{bmatrix} 0 & 1 \\ -4 \cos(x) & 0 \end{bmatrix} \tag{6}$$

$A := subs([x = 0, y = 0], Jm);$

$$\begin{bmatrix} 0 & 1 \\ -4 & 0 \end{bmatrix} \tag{7}$$

$eigenvalues(A);$

$$2\,I, -2\,I \tag{8}$$

$eq := \frac{dy}{dx} = -\frac{4 \cdot \sin(x)}{y};$

$$\frac{dy}{dx} = -\frac{4 \sin(x)}{y} \tag{9}$$

$eq := -\frac{4 \cdot \sin(x)}{y} = 0;$

$$-\frac{4 \sin(x)}{y} = 0 \tag{10}$$

$implicitdiff(eq, y(x), x);$

$$\frac{\cos(x)\, y}{\sin(x)} \tag{11}$$

$implicitdiff(eq, y, x);$

$$\frac{\cos(x)\, y}{\sin(x)} \tag{12}$$

$implicitdiff(eq, x, y);$

$$\frac{\sin(x)}{\cos(x)\, y} \tag{13}$$

$H := (x, y) \rightarrow y^2 - 8 \cdot cosx;$

$$(x, y) \to y^2 + VectorCalculus:-`-`(8\ cos x) \tag{14}$$

$eq := diff(y(x), x) = -\dfrac{4 \cdot \sin(x)}{y(x)};$

$$\frac{d}{dx} y(x) = -\frac{4 \sin(x)}{y(x)} \tag{15}$$

$dsolve(eq, y(x));$

$$y(x) = \sqrt{8 \cos(x) + \_C1}, y(x) = -\sqrt{8 \cos(x) + \_C1} \tag{16}$$