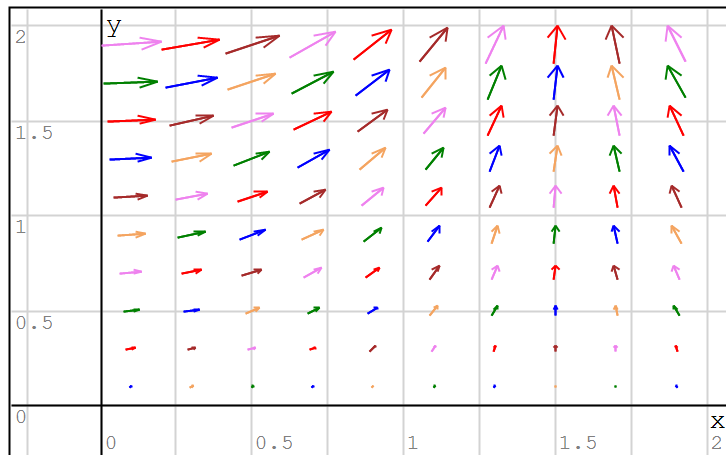
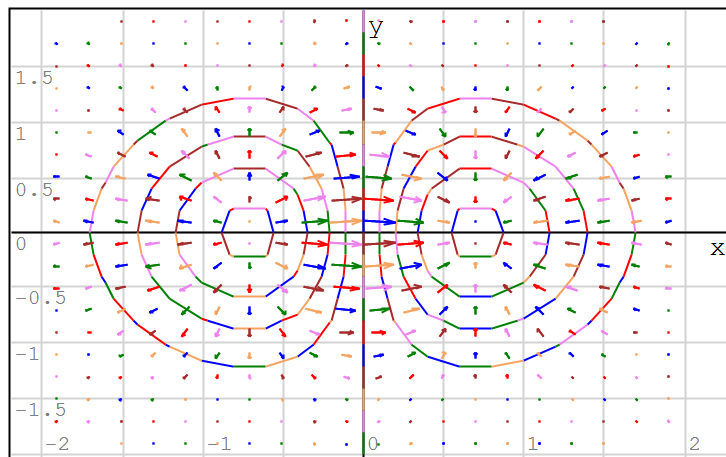


$$\begin{cases} g(x, y) := \begin{bmatrix} y \cdot \cos(x) \\ y \cdot \sin(x) \end{bmatrix} \\ B := \begin{bmatrix} 0 & 2 \\ 0 & 2 \end{bmatrix} \quad N := \begin{bmatrix} 10 \\ 10 \end{bmatrix} \\ V := pVecField(g(x, y), B, N) \end{cases}$$



{V}

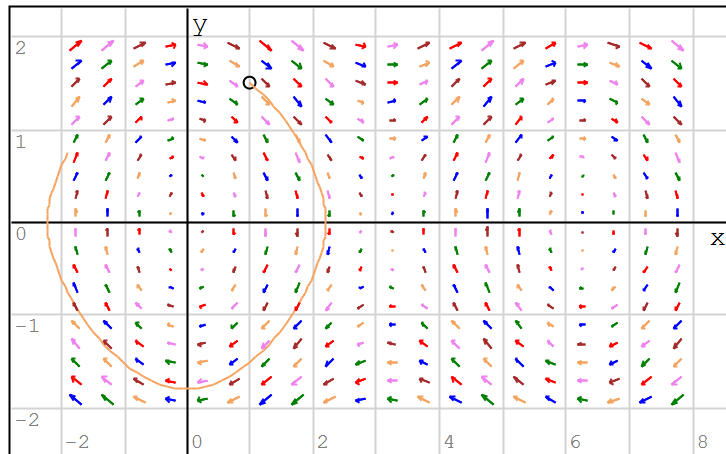
$$\begin{cases} f(x, y) := x \cdot e^{-x^2 - y^2} \\ g(x, y) := \begin{bmatrix} \frac{d}{dx} f(x, y) & \frac{d}{dy} f(x, y) \end{bmatrix}^T \\ B := \begin{bmatrix} -2 & 2 \\ -2 & 2 \end{bmatrix} \quad N := \begin{bmatrix} 20 \\ 20 \end{bmatrix} \quad C := 0.1 \cdot [-4 \dots 4] \\ V := pVecField(g(x, y), B, N) \\ M := pImplicit(f(x, y), B, N, C) \end{cases}$$



{V, M}

Undamped pendulum with no driving force: $x'' + \sin(x) = 0$

$$\begin{cases} f(x, y) := \begin{bmatrix} y \\ -\sin(x) \end{bmatrix} \\ D(t, x) := f(x_1, x_2) \\ B := \begin{bmatrix} -2 & 8 \\ -2 & 2 \end{bmatrix} \quad N := \begin{bmatrix} 20 \\ 20 \end{bmatrix} \quad ic := \begin{bmatrix} 1 \\ 1.5 \end{bmatrix} \\ S := rkfixed(ic, 0, 7, 100, D(t, x)) \\ Plot := \begin{cases} pVecField(f(x, y), B, N) \\ \text{augment}(\text{col}(S, 2), \text{col}(S, 3)) \\ \text{augment}(ic^T, "o") \end{cases} \end{cases}$$



Plot