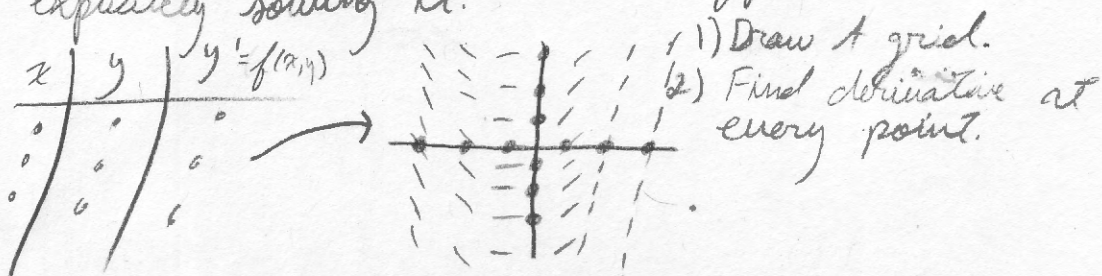


Take notes
Ord. Diff. Eq.
Quiz #1 (1.3, 1.4)

We can then trace the slopes with an initial point to determine a solution curve.

Section 1.3: Direction Fields

Direction fields are useful to analyze an dVP without explicitly solving it.

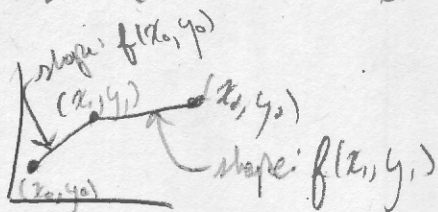


Section 1.4: The Approximation Method of Euler

Euler's Method is a recursive formula used to approximate solutions of dVPs.

dVP: $y' = f(x, y)$, $y(x_0) = y_0$ (*)

General idea is the slope of the tangent line at (x_0, y_0) is $f(x_0, y_0)$ which can be used to approximate the next point.



$$x_i = x_0 + ih, \quad i = 0, 1, 2, \dots$$

$$y - y_0 = f(x_0, y_0)(x - x_0)$$

$$\rightarrow y = y_0 + f(x_0, y_0)(x - x_0)$$

$$x_1 = x_0 + h; \quad y_1 = y_0 + hf(x_0, y_0)$$

$$x_{i+1} = x_i + h; \quad y_{i+1} = y_i + hf(x_i, y_i)$$

* The smaller the h , the better the approximation.

i	x_i	y_i
.	.	.
.	.	.
.	.	.

An estimation of a solution will be in this tabular form.