Introduction

First order equations:

$$\frac{\mathrm{d}y}{\mathrm{d}x} = f(x, y)$$

Artificial form convenient for problems in the book, not real life:

$$M(x, y)\,\mathrm{d}x + N(x, y)\,\mathrm{d}y = 0$$

In real life, only $f = -M/N$ would be known.