Sections: 10.1, 10.2, 10.3, 10.5, 10.6.

DIFFERENTIAL EQUATIONS: an introduction.

A differential equation is an equation which involves an unknown function and some of its derivatives. A solution means any function which satisfies the equation. The general solution is an expression which describes all possible solutions. The order of a differential equation is the highest order derivative of the unknown function which appears in the equation.

We will study only some first order differential equations. These have the form $y' = f(x,y)$, where $f(x,y)$ means a function which depends upon both x (the independent variable) and y (the unknown function). The function f determines the slope field of the differential equation, which is the slope of the tangent line to a solution at a point (x,y).