CHAPTER I

INTRODUCTION

Currently available text books on Differential Equations give the Existence Theorem for solutions of the Ordinary Differential Equations by the Cauchy – Lipschitz method only for single equations of the form $\frac{dy}{dx} = f(x, y)$, which has a solution of the form $y = F(x)$ that reduces to y_0 for $x = x_0$.

In this work we extend this theorem to the system of two simultaneous ordinary differential equations of the form

$$\frac{du}{dx} = f(x, u, v)$$

$$\frac{dv}{dx} = g(x, u, v)$$

of which the solution is specified by equations of the form $u = F(x)$, $v = G(x)$ reducing to u_0 and v_0 for $x = x_0$.