QUIZ 2 — Wednesday, Jan. 15, 2014.

Complete:

The Existence & Uniqueness Theorem for 1st Order IVPs

Consider the IVP

$$\frac{dy}{dx} = f(x,y), \qquad y(x_0) = y_0.$$

If $\underline{f(x,y)}$ and $\underline{\frac{\partial f}{\partial y}}$ _ _ _ are $\underline{continuous}$ _

on some $\underline{open \ rectangle}$ _ _ _ _
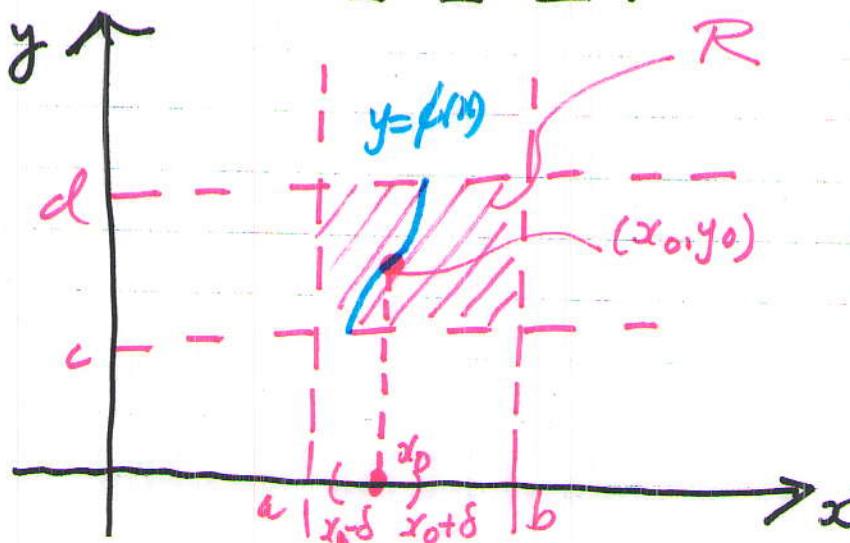
$$R = \left\{ (x,y) : \underline{a < x < b \ \& \ c < y < d} \right\}$$

that contains the point $\underline{(x_0, y_0)}$, then

the IVP has a $\underline{unique}$ solution

$\phi(x)$ on some $\underline{open \ interval}$ $\underline{x_0 - \delta < x < x_0 + \delta}$

where δ $\underline{is \ some \ positive \ number}$ _ _ _ .

Complete
Layout
include
point (x_0, y_0) &
solution
$y = \phi(x)$.