

$$\frac{dy}{dt} = 1 + y^2$$

$$; y(0) = 0$$

$$\frac{1}{1+y^2} \frac{dy}{dt} = 1$$

$$\int \frac{1}{1+y^2} \frac{dy}{dt} dt = \int 1 dt$$

$$\int \frac{1}{1+y^2} dy = t$$

$$\tan^{-1} y = t + C$$

$$y = \tan(t + C)$$

$$\tan(C) = 0 \rightarrow C = 0$$

$$\underline{y = \tan(t)}$$