Problemas Primer Parcial - Taller

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1. Problem 1

Using Euler, improved Euler, RK4 and odeint scipy methods, solve the following ODEs. Determine if each methods converge in the given range. Make a plot of the numerical soutioncs and truncate errors. It is up to you to determine the step size.

1.1. Problem 1.1

$$\frac{dy(t)}{dt} = -y(t) + 1;\ y(0) = 0;\ t = [0, 10] \tag{1}$$

1.2. Problem 1.2

$$5\frac{dy(t)}{dt} = -y(t) + t;\ y(0) = 0;\ t = [0, 10] \tag{2}$$

1.3. Problem 1.3

$$3\frac{dy(t)}{dt} = -y(t) + t^2;\ y(0) = 0;\ t = [0, 10] \tag{3}$$