Punto 4

$$\frac{du}{dt} = u^q, \quad t \in [0, 10]$$

$$\frac{du}{u^q} = dt \implies \int \frac{du}{u^q} = \int dt$$

Si $q = 1$

$$\ln|u| = t + C_1 \quad \text{Si } C_1 = 0$$
$$u = e^t$$

Si $q < 1$ y $t(1-q) + 1 > 0$

$$\frac{u^{-q+1}}{-q+1} = t + C_2$$

$$u^{-q+1} = (t + C_2)(-q+1)$$

$$u = [-qt + t - qC_2 + C_2]^{1/-q+1}$$

$$u = (t(1-q) + C_2)^{1/-q+1} \quad \text{Si } C_2 = 1$$

$$u = (t(1-q) + 1)^{\frac{1}{1}-q}$$