Taller 2.

Ec dF

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

Sol: $u(t) = e^t \Rightarrow q = 1$

$u(t) = (t(1-q) + 1)^{\frac{1}{1-q}}$ para $q \leq 1$ $\Rightarrow$ $q > 0$

$t(1-q) + 1 > 0$ $\quad t(1-q)+1$

$q < 1$:

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

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

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

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

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

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

$q = 1$

$\frac{du}{dt} = u$

$\int \frac{du}{u} = \int dt$

$\ln u = t$

$u = e^{t+c}$