7. $\frac{du}{dt} = \alpha u \qquad u(0) = u_0$

Caso base $u_{(1)} = u_0 + \Delta t \alpha u_0 = u_0(1 + \alpha \Delta t)$

$u_{(2)} = u_0(1 + \Delta t(\alpha) + \Delta t \alpha (u_0(1 + \alpha \Delta t))$

$u_{(2)} = u_0(1 + 2\Delta t \alpha + (\alpha \Delta t)^2) = u_0(1 + \alpha(t))^2$

Paso inductivo:

$$u_{(n)} = u_0(1 + \Delta t\alpha)^n$$

$$u_{(n+1)} = u_0(1 + \Delta t\alpha)^n + \Delta t\alpha(1 + \Delta t\alpha)^n u_0$$

$$u_{(n+1)} = u_0(1 + \Delta t\alpha)^n(1 + \Delta t\alpha).$$

$$u_{(n+1)} = u_0(1 + \Delta t\alpha)^{n+1}$$

si $\Delta t > -1/\alpha \Rightarrow (1 + \Delta t\alpha) < 0$

luego dependiendo del n la solución sea negativa o positiva.