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EDO - Capítulo 4.

$$4.1) \frac{dy}{dt} + P(t) \cdot y = g(t)$$

$$(4.1)(3.3) \frac{dy}{dt} + ay = b \quad (4.3) y(t) = ce^{-at} + \frac{b}{a}$$

$$y(t) = ce^{-P(t)t} + \frac{g(t)}{P(t)}$$

$$\frac{dy}{dt} = -c + e^{-P(t)} + \frac{g(t)P(t)}{(P(t))^2} - \frac{g(t)P(t)'}{(P(t))^3} \quad (3.3)$$

$$4.2) \frac{dy}{dt} + ay = g(t) \Rightarrow u(t) \frac{dy}{dt} + u(t)ay = u(t)g(t)$$

$$\frac{d(u(t) \cdot y(t))}{dt} = u(t)y'(t) + u'(t)y(t) = u(t) \frac{dy}{dt} + au(t)y$$

$$u' = au \Rightarrow u(t) = ce^{at} = e^{at} \text{ para } c=1$$

$$4.3) \frac{dy}{dt} + P(t)y = g(t)$$

$$g(t) = a \Rightarrow \frac{dy}{dt} + ay = g(t) \Rightarrow u(t) = e^{at}$$

$$\frac{dy}{dt} \cdot e^{at} + e^{at}ay = e^{at}g(t) \quad y(t) = e^{-at} \int e^{at}g(t)dt + ce^{-at}$$

$$\int \frac{d(e^{at} \cdot y(t))}{dt} = \int e^{at} \cdot g(t)$$

$$y(t) = e^{-at} \int e^{at} \cdot b dt + ce^{-at}$$

$$e^{at} \cdot y(t) = \int_0^t e^{at} g(t) + c$$

$$y(t) = e^{-at} \frac{b}{a} + ce^{-at}$$

$$= \frac{b}{a} + ce^{-at}$$

