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EDO Parte 3

3.1) $\frac{d^2y}{dT^2} = g(t)$ | $\frac{dy}{dT} = \int_a^T g(T)dT = \int_{T0}^{T} g(t)dT + d$ dt

$Y(T_0) = C \quad Y'(T_0) = d$

$$Y(T) = \int_{t_0}^{T}\left(\int_{t_0}^{z} g(s)ds + d\right)dz + c$$

3.2) $\frac{dP}{dT} = 0,5P - 450$ | $y' = f(T,P)$ | $y^n = f(T, y, y', y'', \ldots, y^{(n-1)})$

$y' = f(t,P) = 0,5P - 450$ //

3.3) $\frac{d^2y}{dT^2} = g(t) = \iint \frac{d^2y}{dT^2} dt\,dt = \iint g(T)\,dt\,dT + C_1 t + C_2$ //

3.4) Exercícios da Lista

3) $\frac{dy}{dT} = -ay + b \quad = y' = -ay + b$

$y' - ay = b$

$\frac{dy}{dT} = -ay + b \quad \frac{dy}{-ay+b} = dT \quad \int \frac{dy}{-ay+b} = \int dT$

$\int \frac{dy}{-ay+b} = T + c \quad = \frac{-\ln|-ay+b|}{a} = T + c$

$u = -ay + b \quad -\ln|ay+b| = aT + c$

$du = -a\,dy \quad ay + b = e^{-aT+c}$

$\frac{du}{a} = dy \quad -ay = e^{-aT+c} + b$

$y = Ce^{-aT} + \frac{b}{a}$ //

b) $S = \{a, b \in \mathbb{R} / a \neq 0\}$