$$tp = t - tpc$$

$$y = e^{\lambda tp}\left(c_1 \cos(\mu(tp)) + c_2 \sin(\mu(tp))\right) + \frac{mg}{k} + y_0 - y_c$$

$$y' = \lambda e^{\lambda(tp)}\left(c_1 \cos(\mu(tp)) + c_2 \sin(\mu(tp))\right) + e^{\lambda(tp)}\left(-\mu c_1 \sin(\mu(tp)) + c_2 \mu \cos(\mu(tp))\right)$$

$y(tp_c) = P_c \qquad y'(tp_c) = V \rightarrow$ velocidad final
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$$y(tpc) = c_1 + \frac{mg}{k} + y_0 - y_c$$

$$y'(tpc) = \lambda(c_1) + c_2 \mu$$

$$y(tpc) = P_c \rightarrow P_c = c_1 + \frac{mg}{k} + y_0 - y_c$$

$$\underline{c_1 = P_c - \frac{mg}{k} - y_0 + y_c}$$

$$y'(tpc) = V$$

$$V = \lambda c_1 + c_2 \mu$$

$$\underline{c_2 = \frac{V - \lambda c_1}{\mu}}$$