# Pauta Pregunta 1, Control 3

$$L_p = \int y' dx = \int n\alpha x^{n-1} dx \Rightarrow L_p = \alpha x_p^n \Rightarrow x_p = \left(\frac{L_p}{\alpha}\right)^{\frac{1}{n}}$$

$\rightarrow$ 0,5

$$D = x_p + x_p' \approx \left(\frac{L_p}{\alpha}\right)^{\frac{1}{n}} + A\sqrt{2\tau}$$

$$\Rightarrow A = \frac{D - \left(\frac{L_p}{\alpha}\right)^{\frac{1}{n}}}{\sqrt{2\tau}}$$

$\rightarrow$ 1,0

$$R_p = \frac{y'^2}{y''} = \frac{n^2\alpha^2 x_p^{2(n-1)}}{n(n-1)\alpha x^{n-2}} = \frac{n\alpha}{n-1} x^{2n-2-n+2} = \frac{n\alpha}{n-1} x^n = \frac{n}{n-1} L_p$$

$\rightarrow$ 1,5

$$R_c = \frac{A}{\sqrt{2\tau}} = \frac{D - \left(\frac{L_p}{\alpha}\right)^{\frac{1}{n}}}{2\tau}$$

$\rightarrow$ 0,5

$$\frac{R_c}{R_p} = \frac{n-1}{n} \frac{D - \left(\frac{L_p}{\alpha}\right)^{\frac{1}{n}}}{2L_p\tau}$$

$\rightarrow$ 0,2

$\tau_{\mathbf{c}} = \tau_{\mathbf{p}}$

$$\tau_p \Rightarrow dL_p = R_p \cdot d\tau_p = \frac{n}{n-1} L_p d\tau_p \Rightarrow \frac{dL_p}{L_p} = \frac{n}{n-1} \cdot d\tau_p$$

$\rightarrow$ 1,0

**Integrando**

$$\Rightarrow \int_0^{L_p} \frac{dL_p}{L_p} = \int_0^{\tau_p} \frac{n}{n-1} \cdot d\tau_p \Rightarrow ln(L_p) - 1 = \frac{n}{n-1} \cdot \tau_p \Rightarrow \tau_p = \frac{n}{n-1}(ln(L_p) - 1)$$

$\rightarrow$ 0,7

$$\Rightarrow A = \frac{D - \left(\frac{L_p}{\alpha}\right)^{\frac{1}{n}}}{2\frac{n}{n-1}(ln(L_p) - 1)}; \frac{R_c}{R_p} = \frac{D - \left(\frac{L_p}{\alpha}\right)^{\frac{1}{n}}}{2L_p(ln(L_p) - 1)}$$

$\rightarrow$ 0,3$c/u$