PAUTA P1 AUX#6

Lo primero es determinar el caudal

$$B = z_0 = \mu a + \frac{q^2}{2g(\mu a)^2} \Leftrightarrow q = \sqrt{(z_0 - \mu a)\,2g(\mu a)^2} = 4{,}175\,[m^3/s/m]$$

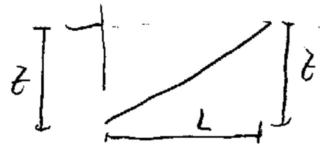
$$\Rightarrow Q = qb = 12{,}525\,[m^3/s] \;;\; h_c = \sqrt[3]{\frac{q^2}{g}} = 1{,}212\,[m]$$

$$i_c = \left(\frac{Qn}{AR^{2/3}}\right)^2 \;;\; A_c = bh_c = 1{,}212\cdot 3 = 3{,}636\,[m^2] \;;\; \chi_c = 2h_c + b = 5{,}424\,[m]$$

$$\Rightarrow R_c = 0{,}67\,[m] \quad \Rightarrow i_c = \left(\frac{12{,}525\cdot 0{,}013}{3{,}636\cdot 0{,}67^{2/3}}\right)^2 = 0{,}0034$$

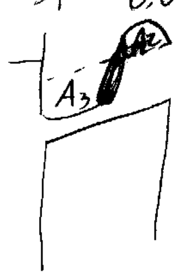
Ejes Posibles

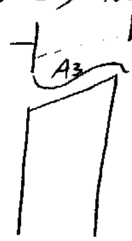
1) S_1 $-\infty < i < i_1 \Rightarrow$ No hay escurrimiento



$$z = i_1 \cdot L \Leftrightarrow i_1 = \frac{z}{L} = \frac{3}{100} = 0{,}03 \Rightarrow i_1 = -0{,}03$$

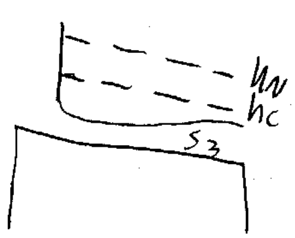
2) S_1 $-0{,}03 < i < 0 \Rightarrow$ Pendiente adversa



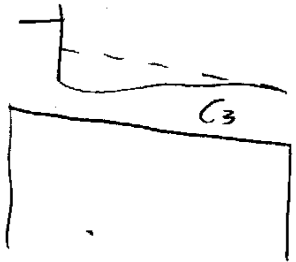


3) $i = 0$

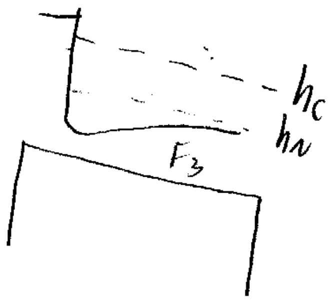
4) $0 < i < i_c$



5) $i = i_c = 0{,}0034$



6) $i_c < i < i_2$



7) $i_2 < i < \infty$

Encontremos i_2: Pendiente tq $h_n = 0{,}61$

$$i = \left(\frac{Qn}{AR^{2/3}}\right)^2 = \left(\frac{Qn}{h_n b \cdot \left(\frac{h_n b}{2h_n + b}\right)^{2/3}}\right)^2 = \left(\frac{12{,}525 \cdot 0{,}013}{0{,}61 \cdot 3 \left(\frac{0{,}61 \cdot 3}{2 \cdot 0{,}61 + 3}\right)^{2/3}}\right)^2 = 0{,}024$$