

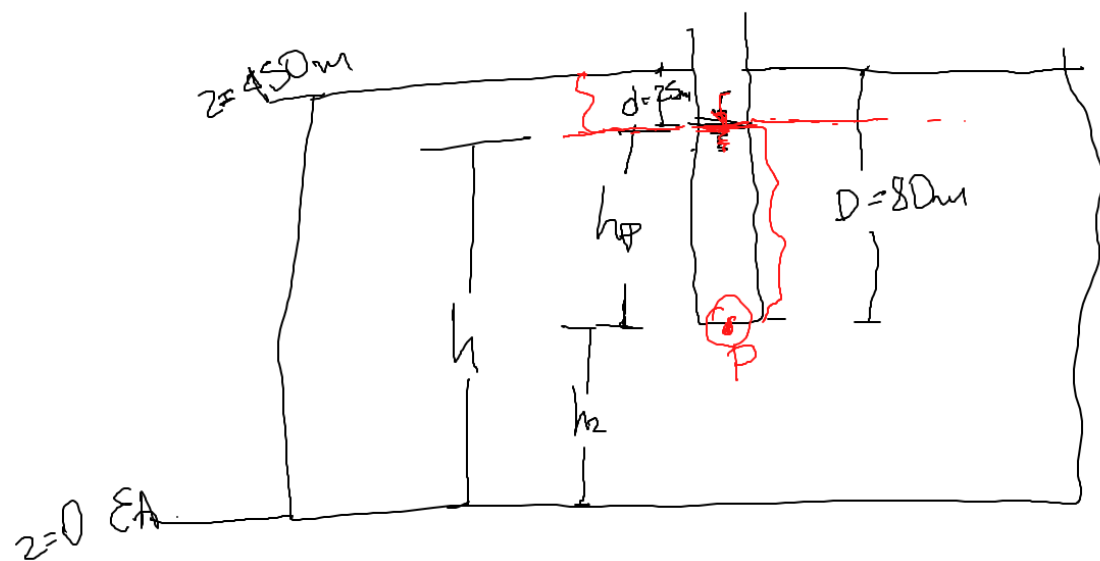
Άσκηση 1^η

Υψόμετρο $z = 450\text{m}$

Βάθος πυράδας από την επιφ. $D = 80\text{m}$

Βάθος υδροφ. οριζ. $d = 25\text{m}$

το ηγεύμας $h_p = ?$
το δυναμικό ύψος $h_2 = ?$
το υδρ. ύψος $h = ?$
την πίεση $P = ?$



$$h_2 = z - D = 450 - 80 = 370\text{m}$$

$$h_p = D - d = 80 - 25 = 55$$

$$h = h_2 + h_p = 370 + 55 = 425\text{m}$$

$$\begin{aligned} P &= \gamma \cdot h_p = \rho \cdot g \cdot h_p = \\ &= 1000 \frac{\text{kg}}{\text{m}^3} \cdot 9,81 \cdot 55 = \\ &= 539,55 \text{ kPa} \end{aligned}$$

- Άσκηση 2^η

① ταν ποισ

② ταν σινθνας

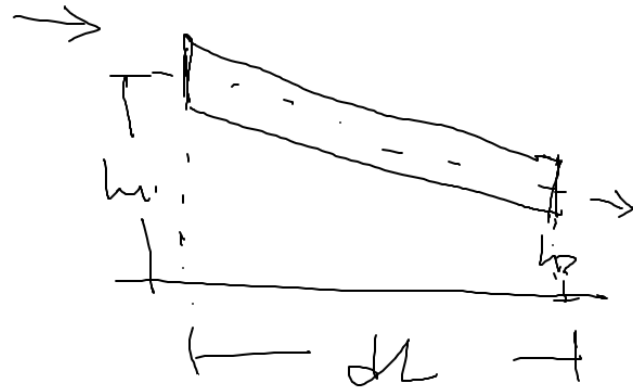
③ η ηλποισ ταν ποισ

$$K = 10^{-4} \text{ cm/s}$$

$$\eta = 0,2$$

$$\frac{dh}{dl} = 0,01 \text{ vsp. κτιαν}$$

$$A = 75 \text{ cm}^2$$



$$\frac{dh}{dl} = 0,01$$

① ταν Darcy / ταν ποισ

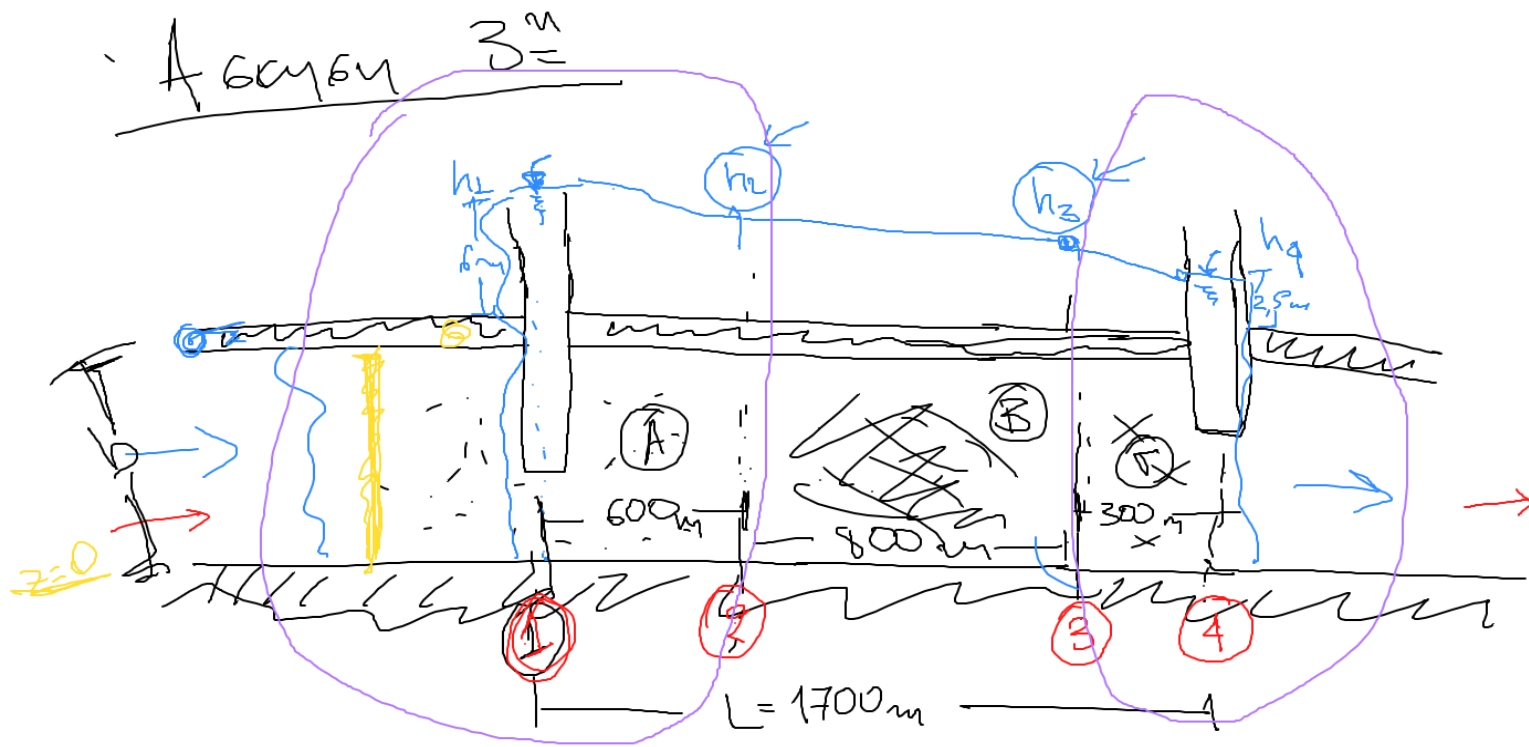
$$q = -K \frac{dh}{dl} = -10^{-4} \frac{\text{cm}}{\text{s}} \cdot (0,01) =$$
$$= 10^{-6} \frac{\text{cm}}{\text{s}}$$

② ταν σινθνας

$$u_s = \frac{u}{\eta} = \frac{10^{-6}}{0,2} = 5 \cdot 10^{-6} \frac{\text{cm}}{\text{s}}$$

③ $\pi_{\text{apoxi}} \quad Q = v \cdot A =$

$$= 10^{-6} \frac{\text{cm}}{\text{s}} \cdot 75 \text{ cm}^2 = 7,5 \cdot 10^{-5} \frac{\text{cm}^3}{\text{s}}$$



$$q' = 0,008 \text{ m}^2/\text{h}$$

$$K_A = 13 \text{ m/d}$$

$$K_B = 9 \text{ m/d}$$

$$b = 18 \text{ m}$$

$\nabla \varphi$ (Darcy) $\Rightarrow$

$\Rightarrow \text{Darcy}$

Darcy $1 \rightarrow 2$

$$q'_{02} = q'_{1A} = q \cdot b = -K \frac{\Delta h}{\Delta L} \cdot b =$$

$$= -K_A \cdot \frac{(h_2 - h_1)}{L_{1,2}} \cdot b \Rightarrow h_2 - h_1 = \frac{q'_{1A} \cdot L_{1,2}}{-K_A \cdot b} \Rightarrow$$

$$\Rightarrow h_2 = h_1 - \frac{q'_{1A} \cdot L_{1,2}}{K_A \cdot b} = 6 \text{ m} - \frac{0,008 \frac{\text{m}^2}{\text{s}} \cdot 600 \text{ m}}{13 \frac{\text{m}}{\text{s}} \cdot \frac{1 \text{ d}}{24 \text{ h}} \cdot 18 \text{ m}} =$$

$$= 5,508 \text{ m}.$$

Darcy $3 \rightarrow 4$

$$q'_{ol} = q'_r = q' \cdot b = -K_r \frac{\Delta h}{\Delta L} \cdot b \Rightarrow$$

$$q'_{ol} = -K_r \frac{h_4 - h_3}{L_{3,4}} \cdot b \Rightarrow h_4 - h_3 = \frac{q'_{ol} \cdot L_{3,4}}{-K_r \cdot b} \Rightarrow$$

$$h_3 = h_4 + \frac{q'_{ol} L_{3,4}}{K_r \cdot b} = 2,5 \text{ m} + \frac{0,008 \frac{\text{m}^2}{\text{s}} \cdot 300 \text{ m}}{9 \frac{\text{m}}{\text{s}} \cdot \frac{14}{24 \text{ h}} \cdot 18 \text{ m}} = 2,856 \text{ m}$$

$$h_2 = 5,508 \text{ m}$$
$$h_3 = 2,856 \text{ m}$$

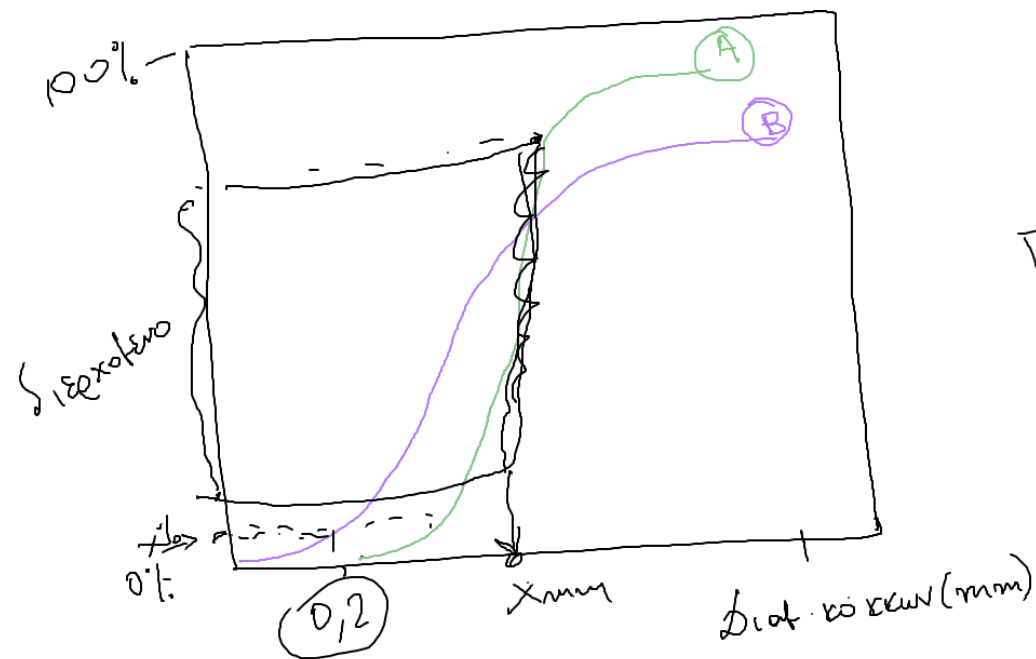
$\rightarrow$ Darcy $2 \rightarrow 3 : K_B$

Darcy $2 \rightarrow 3$

$$q'_{\omega} = q'_{\text{B}} = -K_{\text{B}} \frac{\Delta h}{\Delta L} \cdot b = -K_{\text{B}} \frac{h_3 - h_2}{L_{2,3}} \cdot b \Rightarrow$$

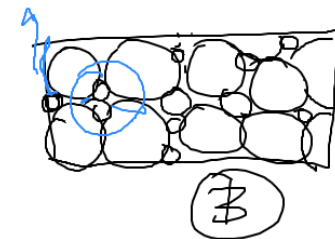
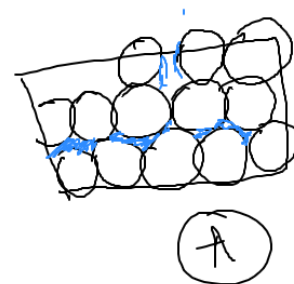
$$\Rightarrow K_{\text{B}} = \frac{q'_{\omega} \cdot L_{2,3}}{(h_2 - h_3) \cdot b} = \frac{0,008 \frac{\text{m}^2}{\text{h}} \cdot 24 \frac{\text{h}}{\text{d}} \cdot 800 \text{m}}{(5,508 - 2,856) \text{m} \cdot 18 \text{m}} = 3,218 \frac{\text{m}}{\text{d}}$$

A γαλακτότητα f_m



Ⓐ: όχι καλή διαβάθμιση κοκκίων

Β: καλή διαβάθμιση κοκκίων

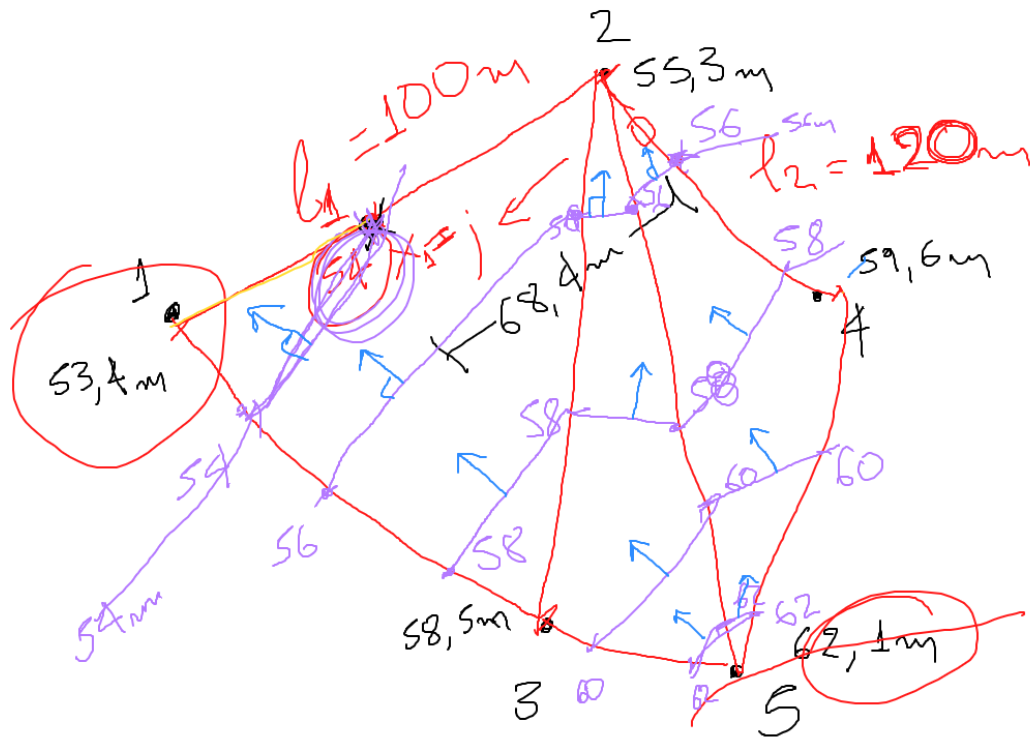


Πορώδες Α > Πορώδες Β:

$$n_A > n_B$$

Β καλύτερη διαβ → επιχομείνς κρύψωαυ εντονότερη →
καλύτερο για ρυτιές ρίψας

~~Asymptotically~~



$$r_{id} \text{ to } x_1: \frac{55,3 - 53,4}{100} = \frac{55,3 - 54}{x_1} \Rightarrow x_1 = 68,4 \text{ m}$$

$$a \vee x \quad 2m$$
$$m d_x : 62,1 \text{ m}$$

min: 53,4 m

6 2_m 60_m 58_m 56_m
54 m

and I'm

62, 61, 60 ... - 54.

120	55,3	0
	56	x_1
	58	x_2
0	59,6	120