



**TWO AND THREE LAYER
MASTER CURVES
FOR SCHLUMBERGER SOUNDING
INTERPRETATION**

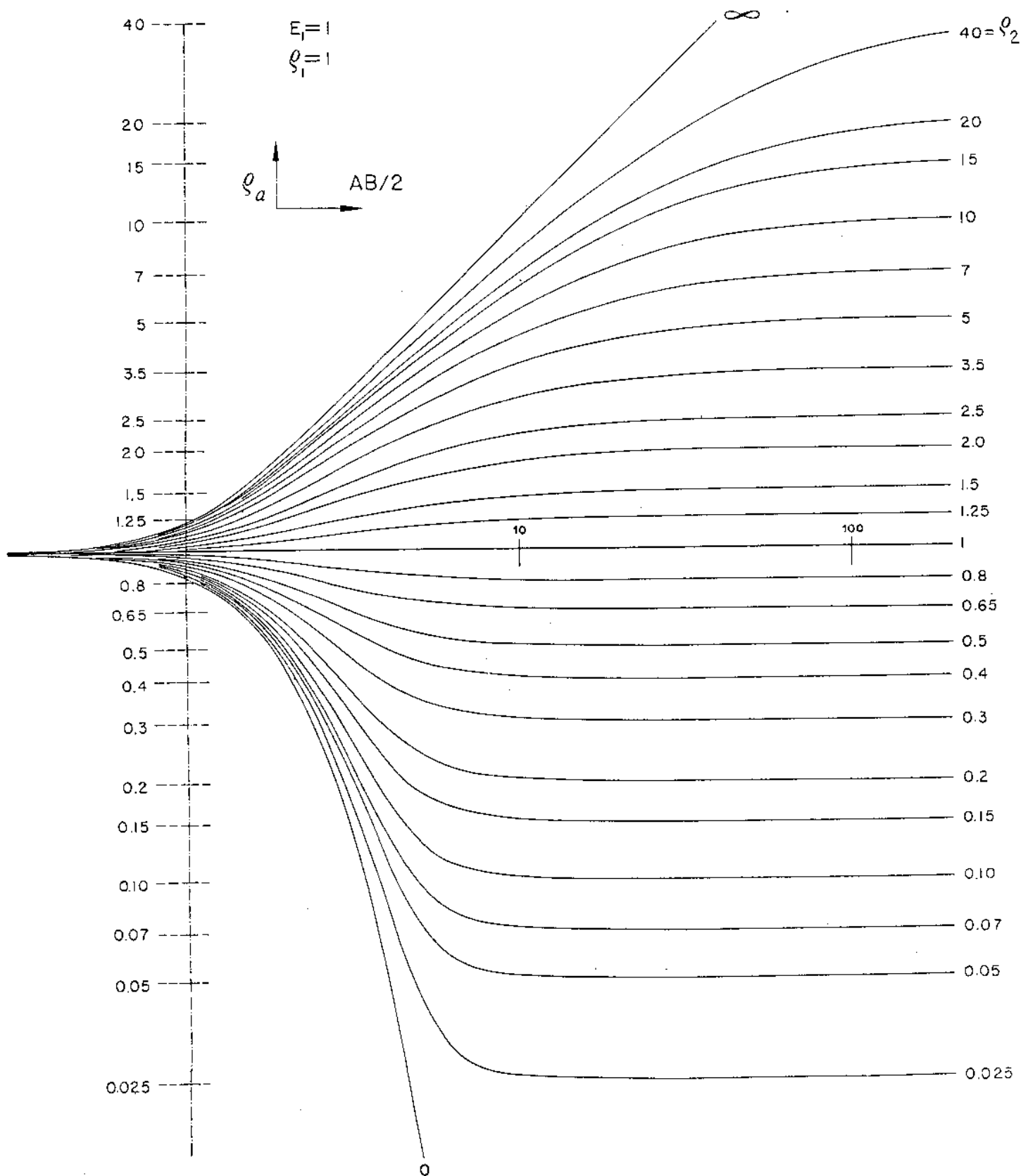
From ORELLANA and MOONEY

IRIS Instruments

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 MASTER CURVES FOR V.E.S.
 CURVAS PATRON PARA S.E.V.

TWO — LAYER CURVES — CURVAS DE DOS CAPAS

HOW TO USE THE THREE LAYER MASTER CURVES

The three layer master curves are classified in four parts according to their shapes :

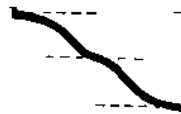
1 - The bowl type (diagrams H-1 to H-25)



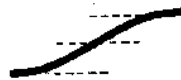
2 - The bell type (diagrams K-1 to K-25)



3 - The stair step down (diagrams Q-1 to Q-13)

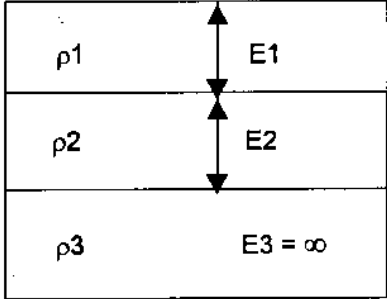


4 - The stair step up (diagrams A-1 to A-13)

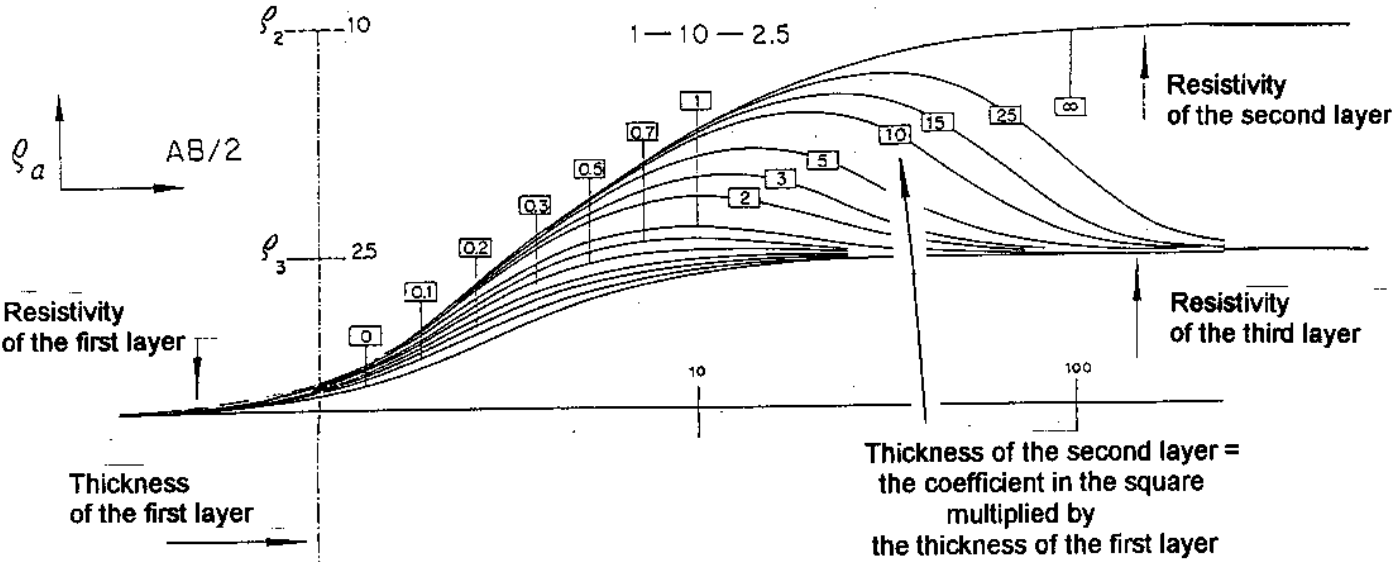


The parameters of the three layer solution are :

- ρ_1 : resistivity of the first layer
- ρ_2 : resistivity of the second layer
- ρ_3 : resistivity of the third layer
- E1 : thickness of the first layer
- E2 : thickness of the second layer
- E1 + E2 : depth of the third layer

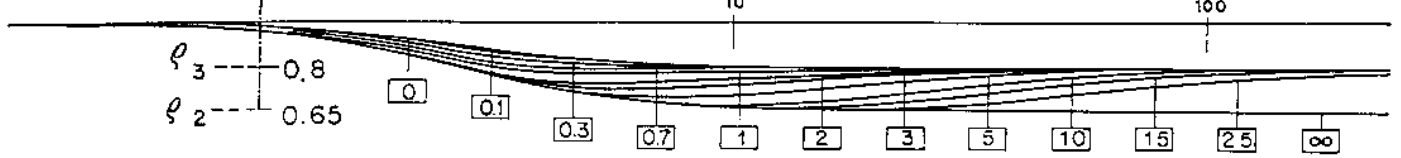


The field curve, plotted on a transparent paper has to be superposed on a curve of the diagram which fits it. Then, the values of the parameters ρ_1 , ρ_2 , ρ_3 , and E1 can be read directly on the transparent paper according to the graphical indications mentioned in the example here under presented. The parameter E2 is obtained by multiplying the coefficient shown in the small square by the value of E1.



H-1

1 - 0.65 - 0.8



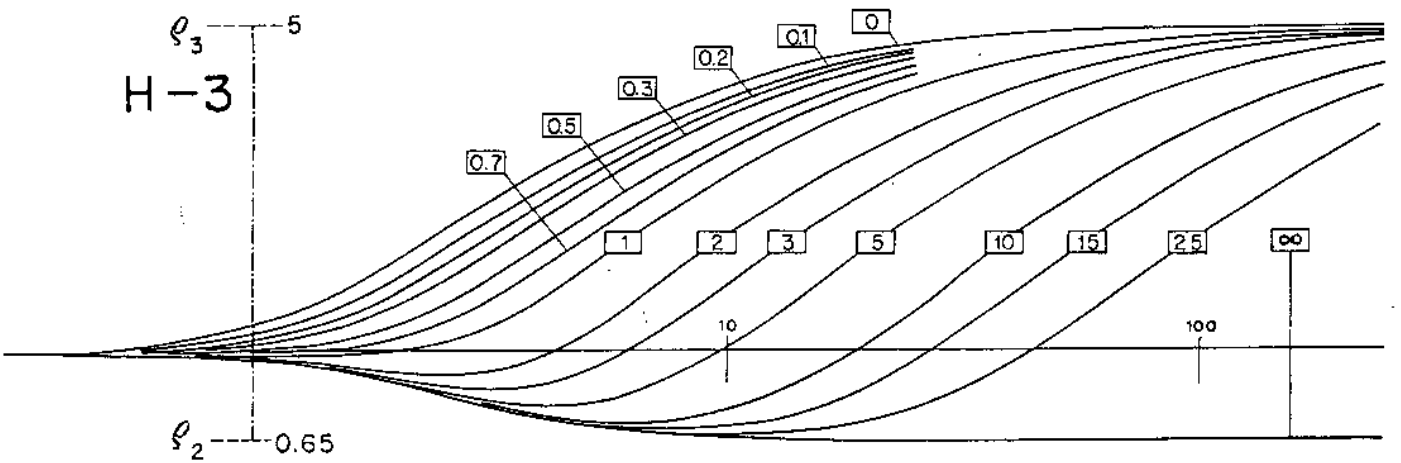
H-2

1 - 0.65 - 1



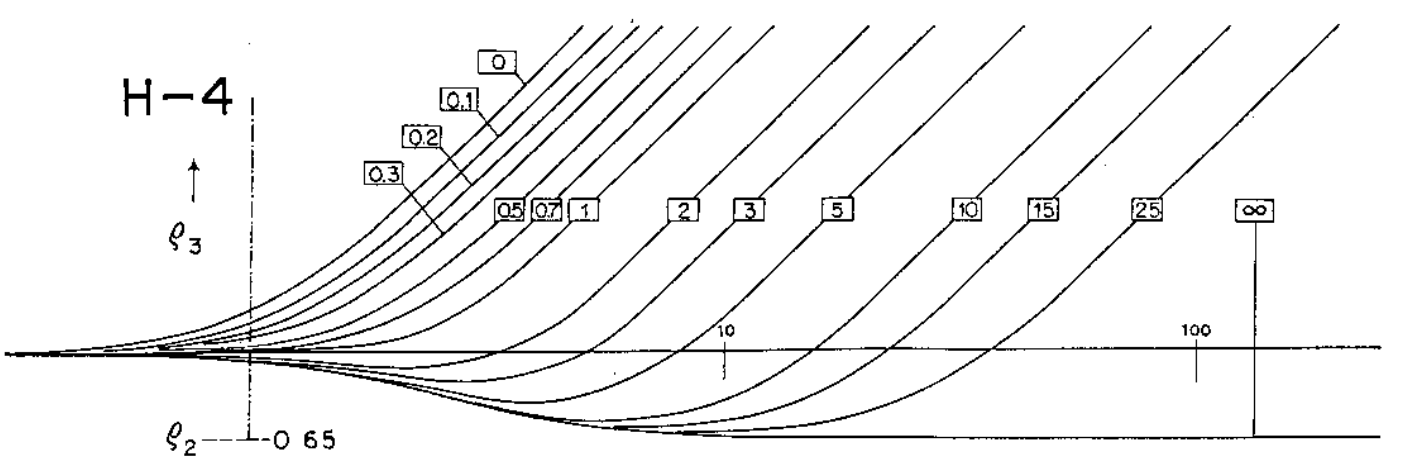
H-3

1 - 0.65 - 5



H-4

1 - 0.65 - infinity



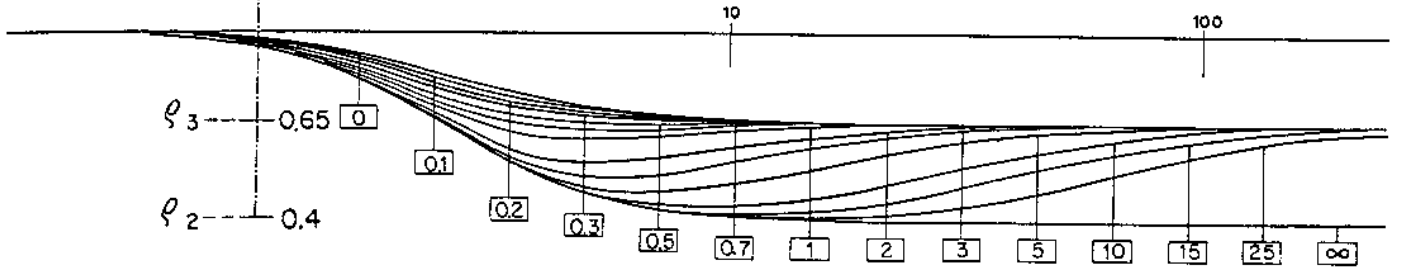
$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

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THREE - LAYER CURVES - CURVAS DE TRES CAPAS

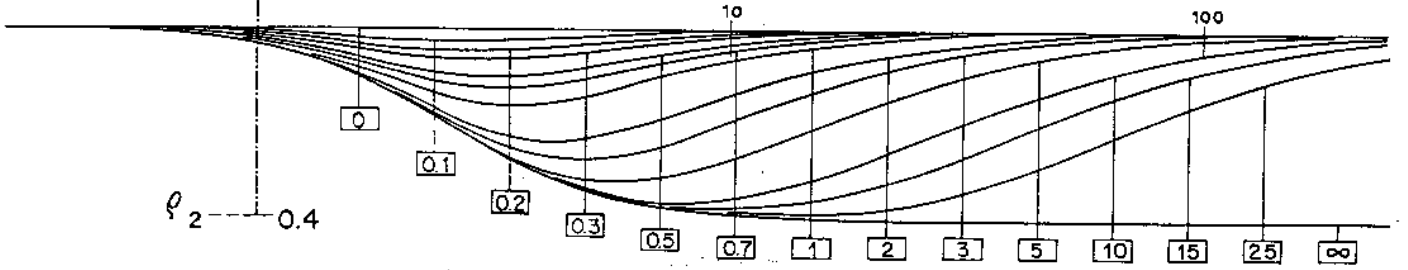
H-5

1-0.4-0.65



H-6

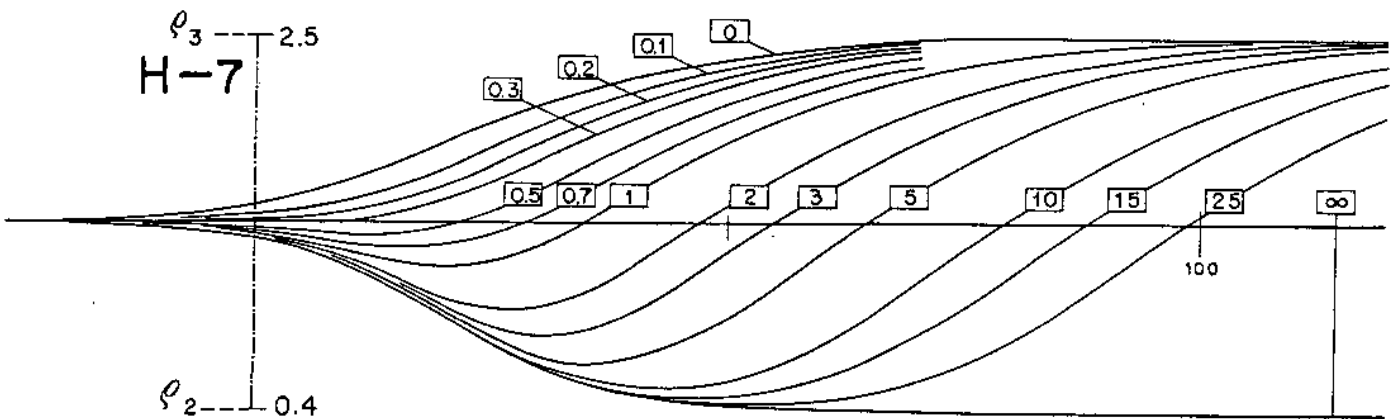
1-0.4-1



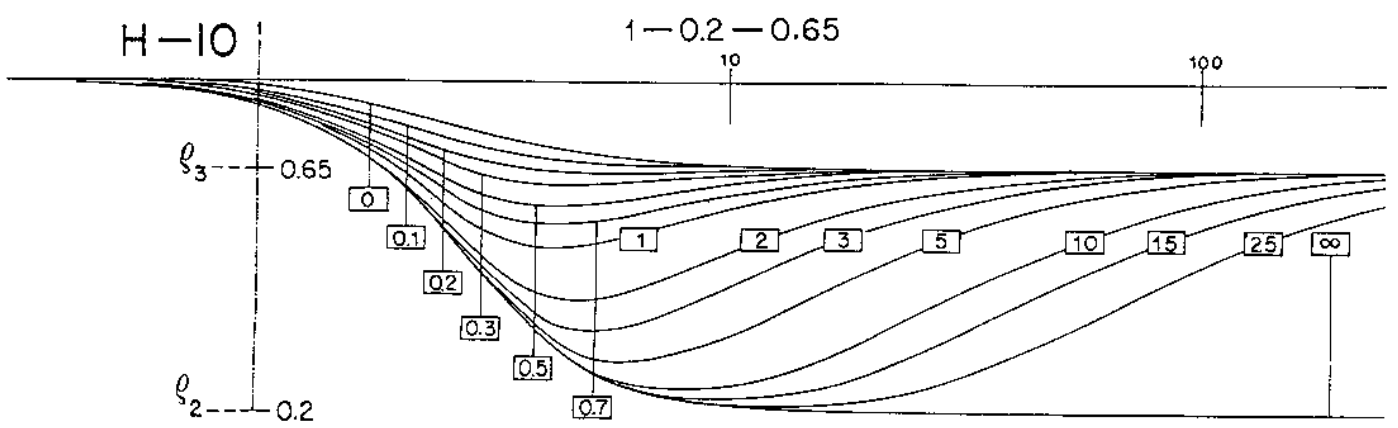
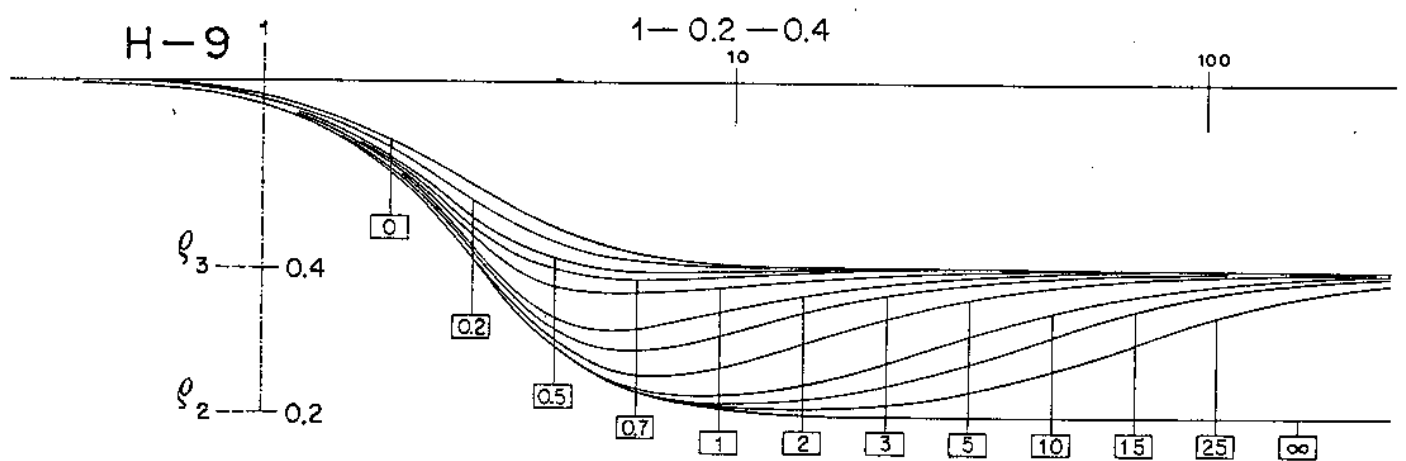
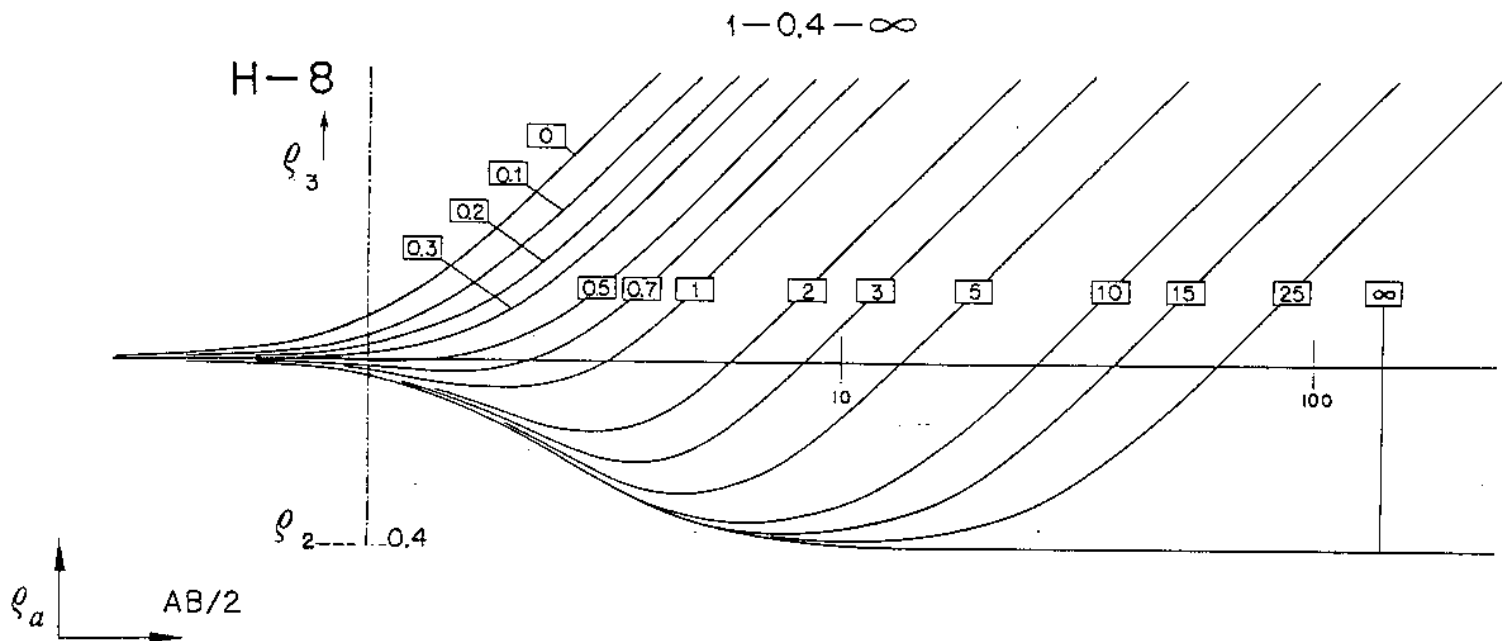
ρ_a ↑
 → AB/2

1-0.4-2.5

H-7

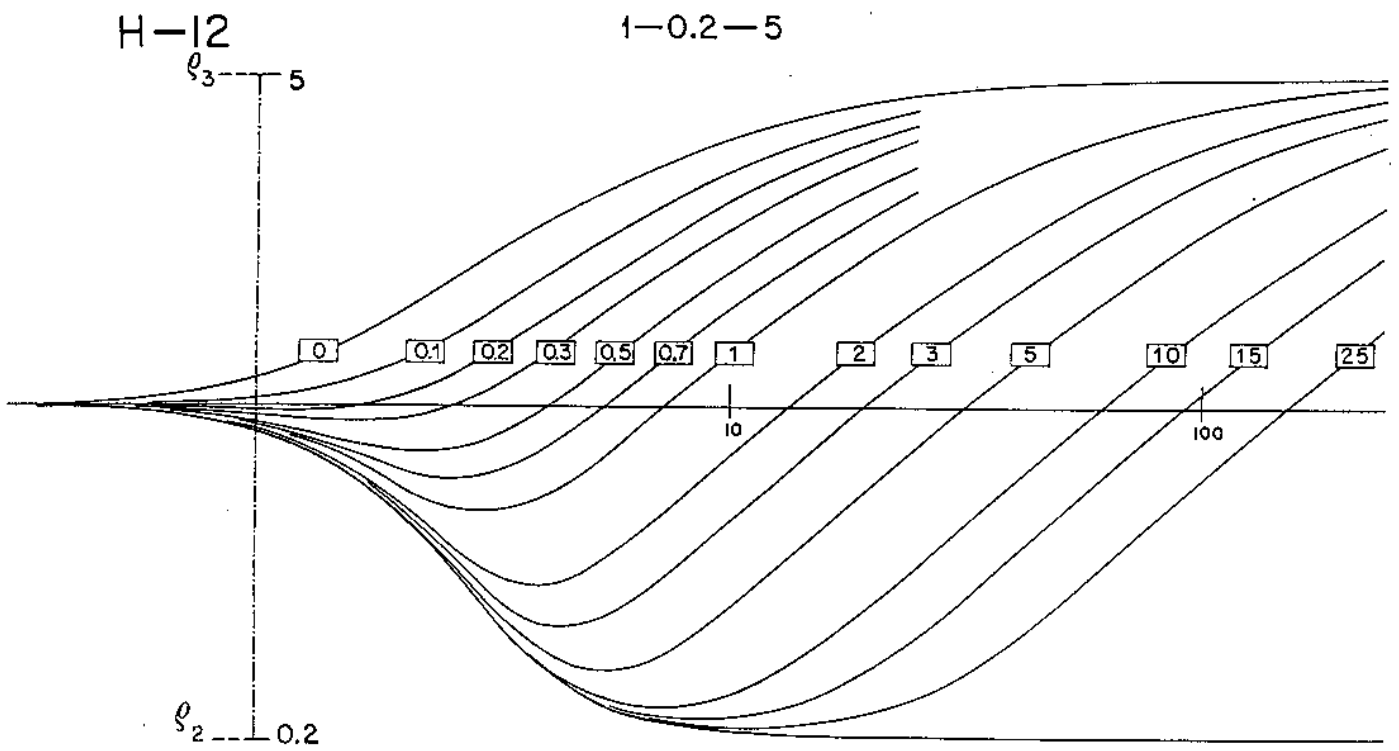
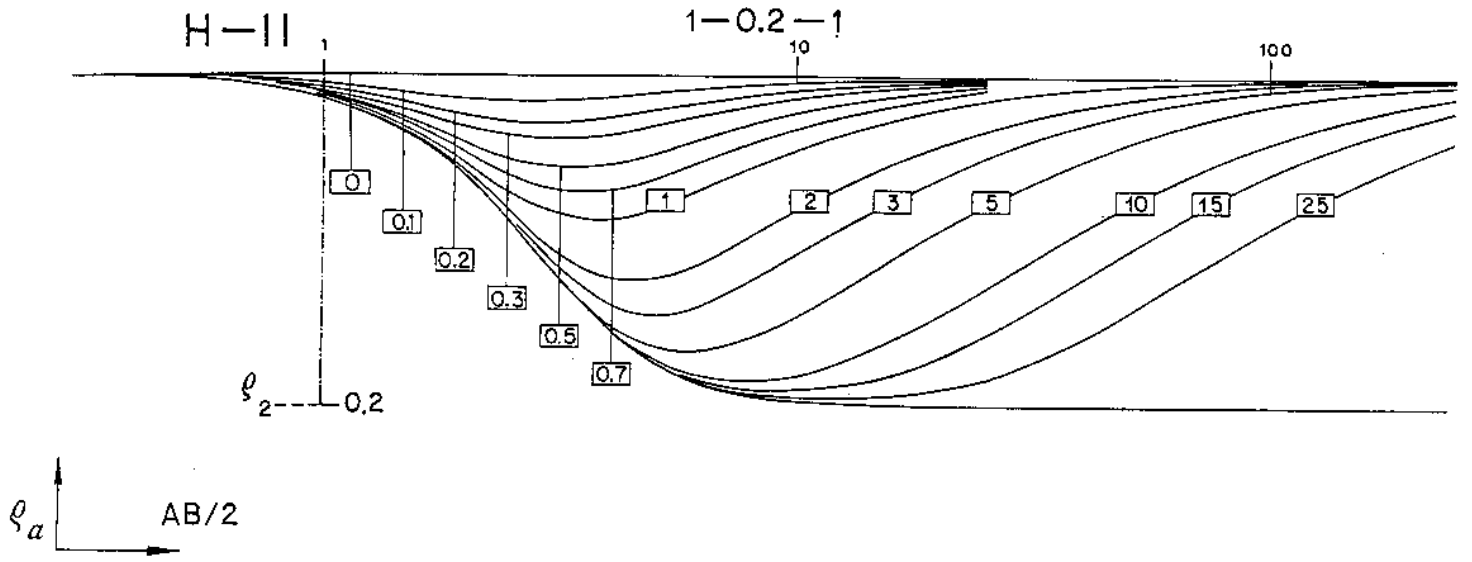


$$E_1 = 1; \rho_1 = 1; E_2 = \square$$



$E_1 = 1; \rho_1 = 1; E_2 = \square$

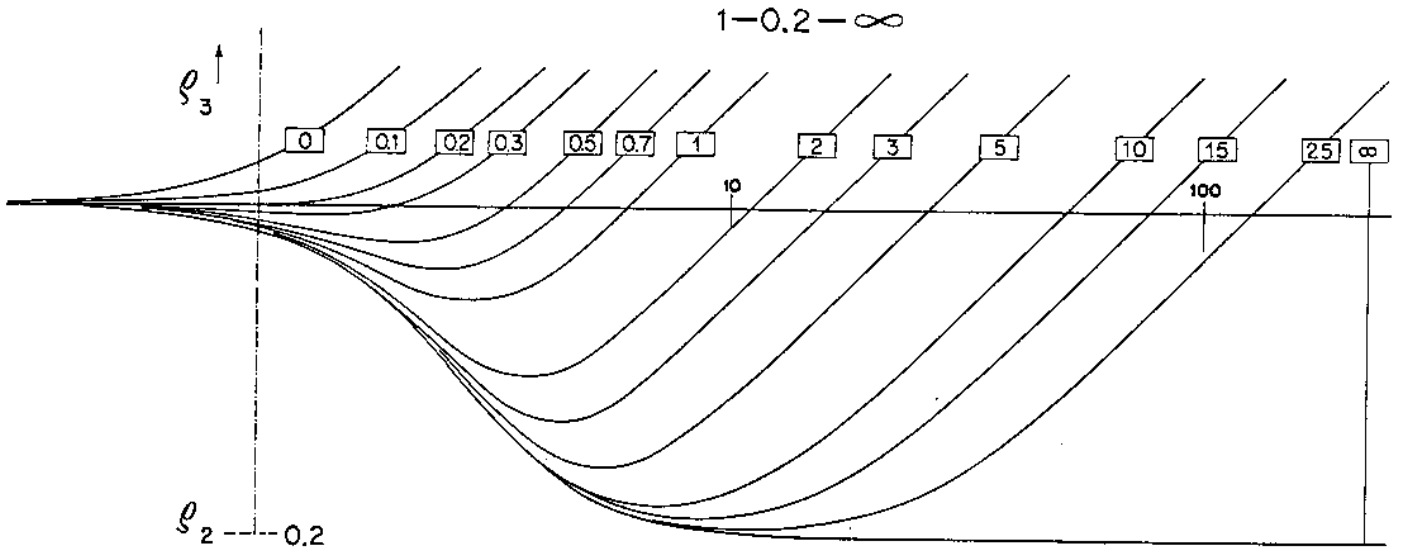
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$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

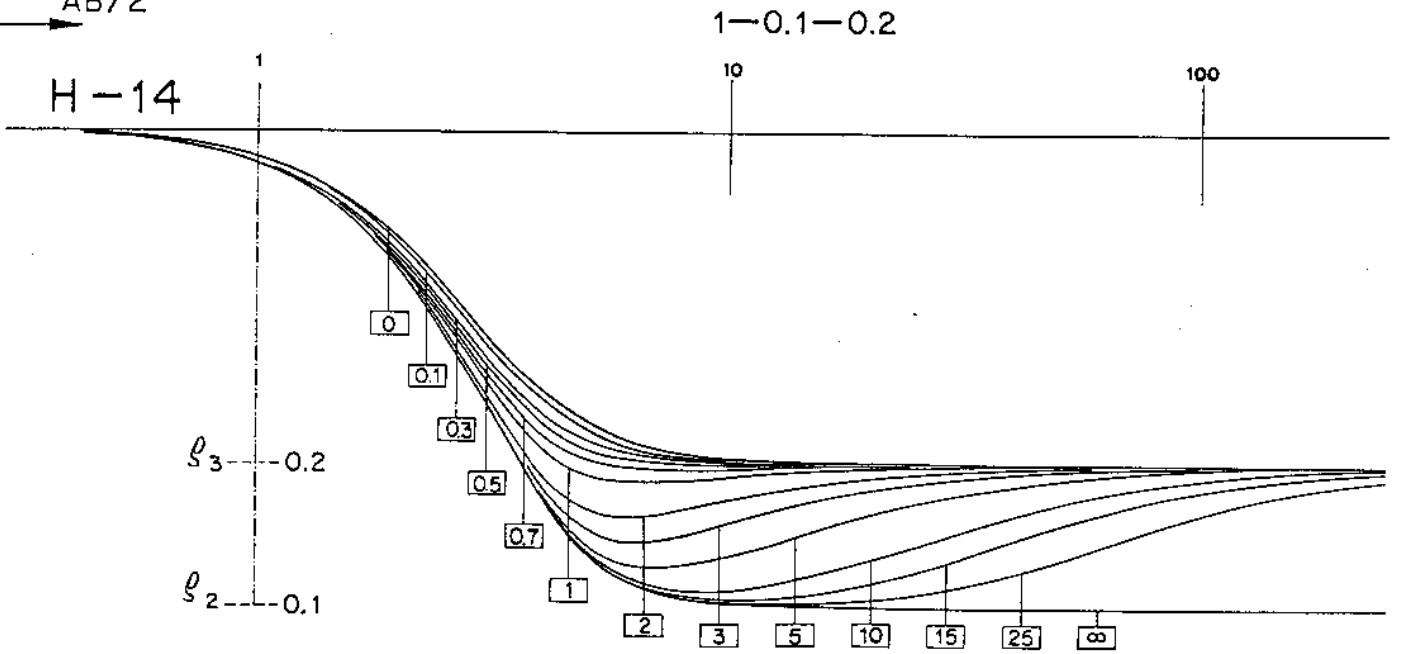
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H-13



ν_a ↑
AB/2 →

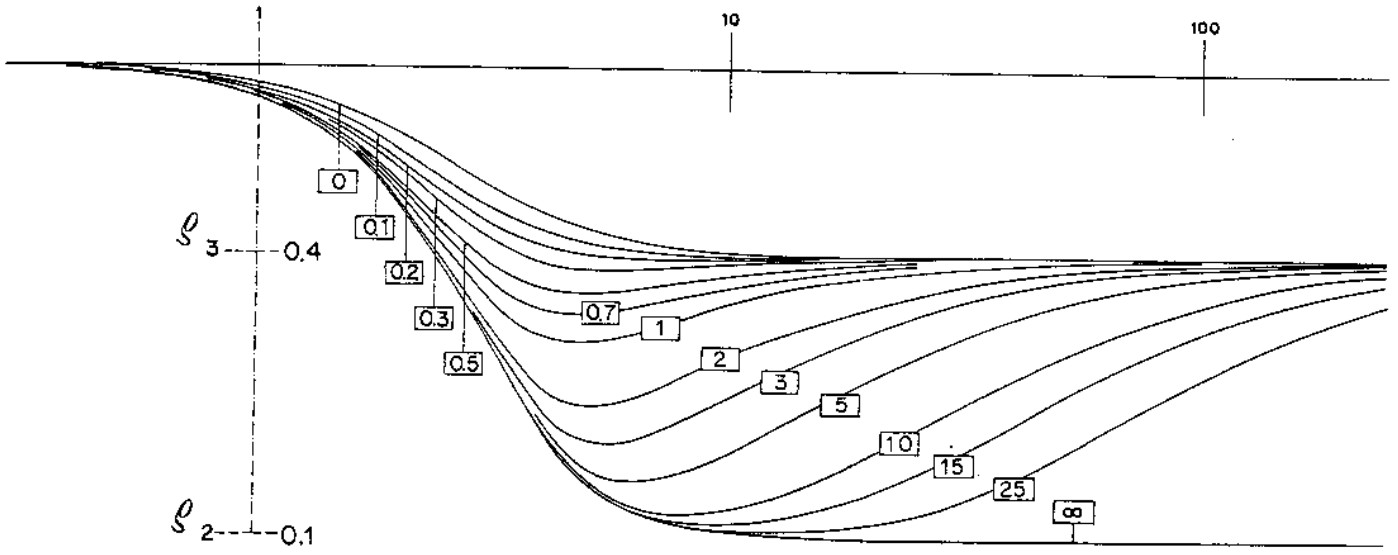
H-14



$$E_1 = 1; \nu_1 = 1; E_2 = \square$$

H-15

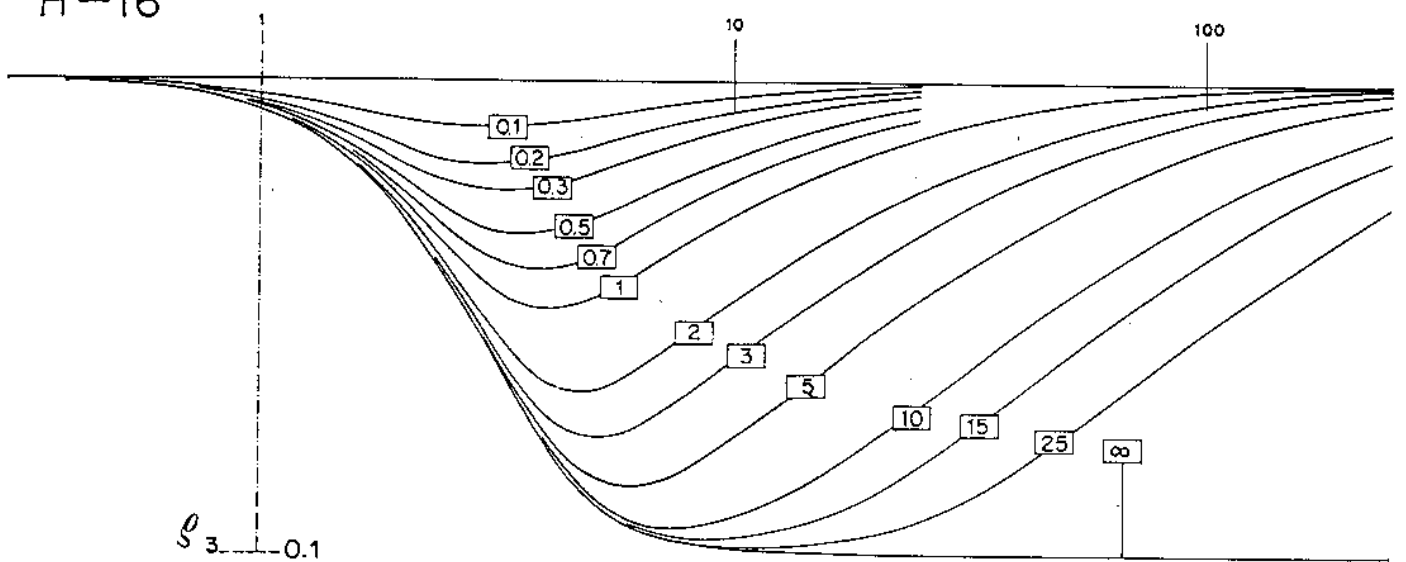
1-0.1-0.4



ν_a \rightarrow $AB/2$

H-16

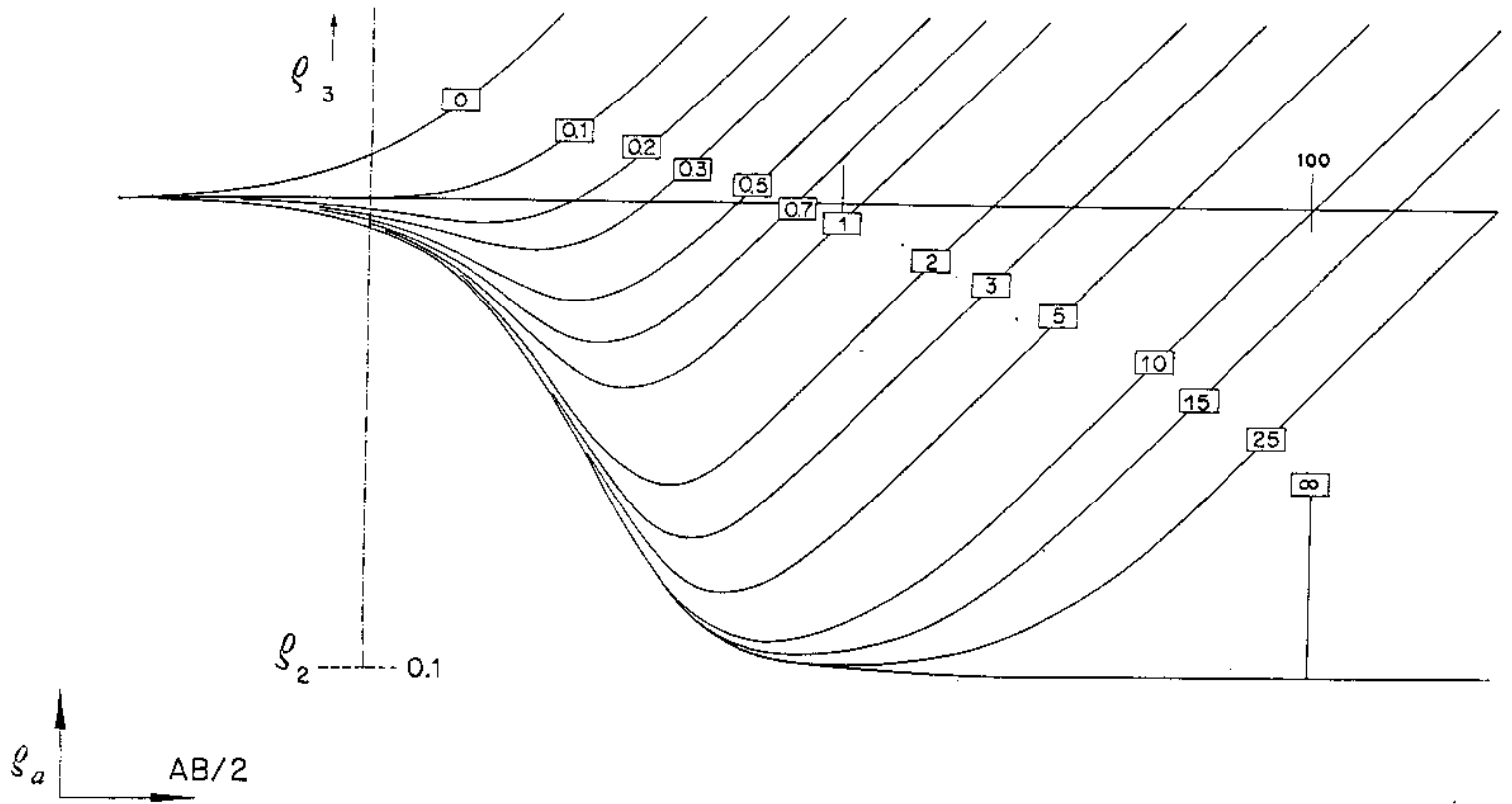
1-0.1-1



$$E_1 = 1; \nu = 1; E_2 = \square$$

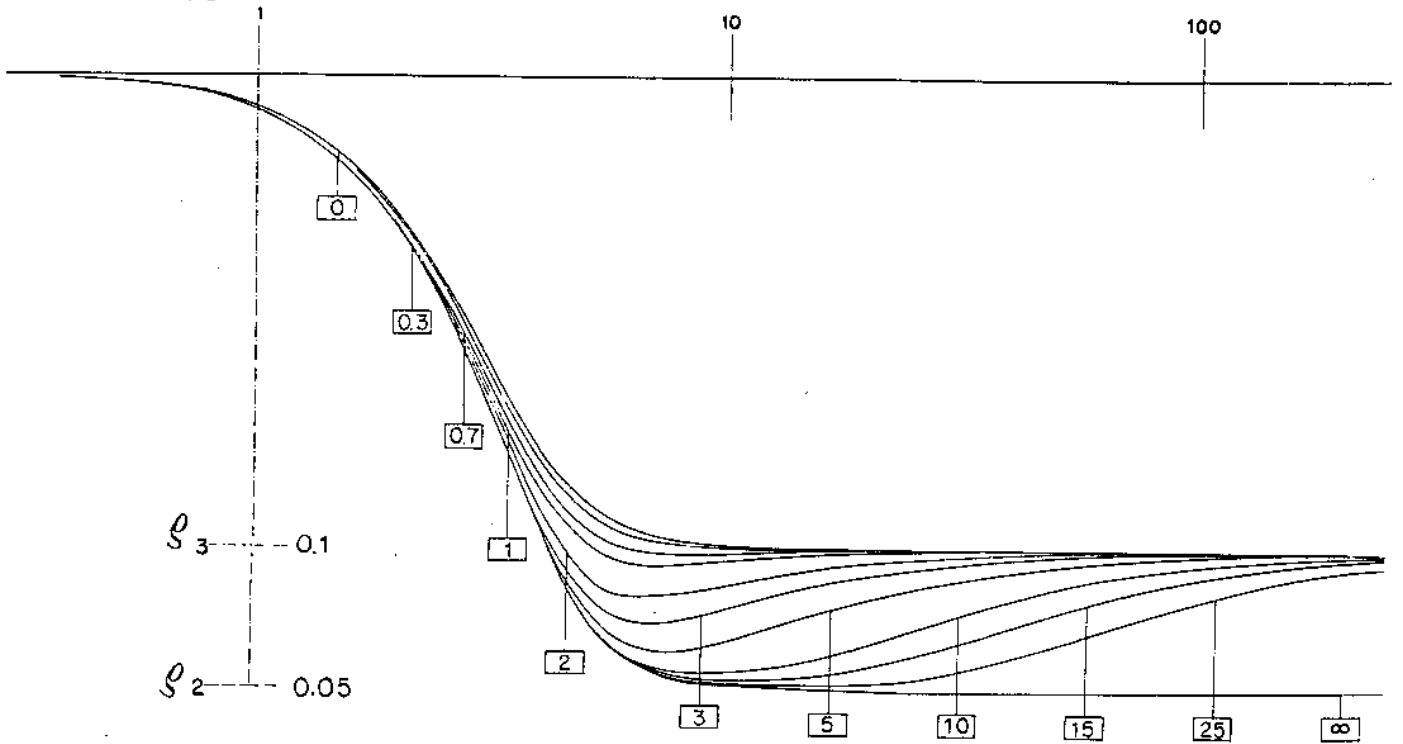
H-17

1-0.1-∞



H-18

1-0.05-0.1

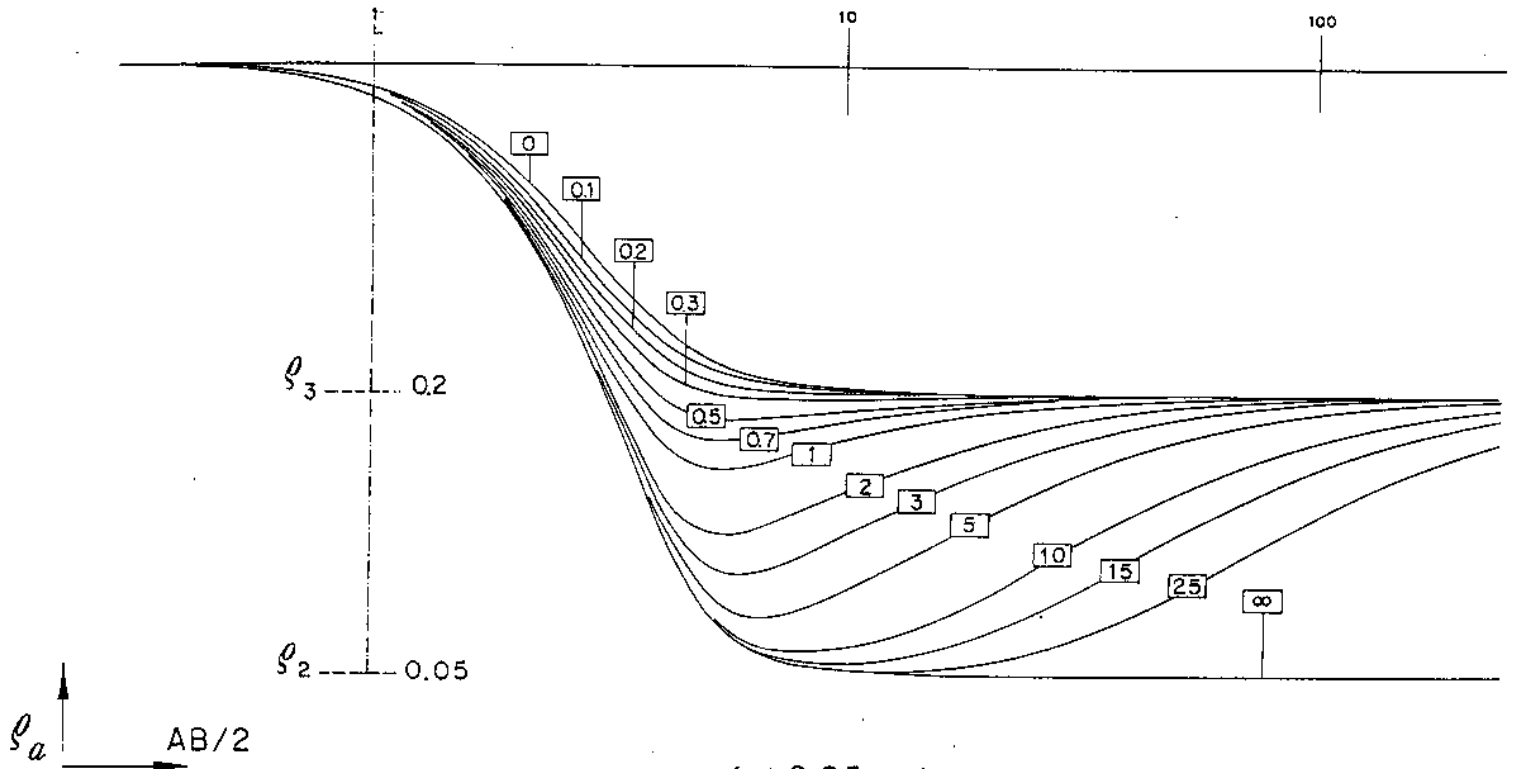


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$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

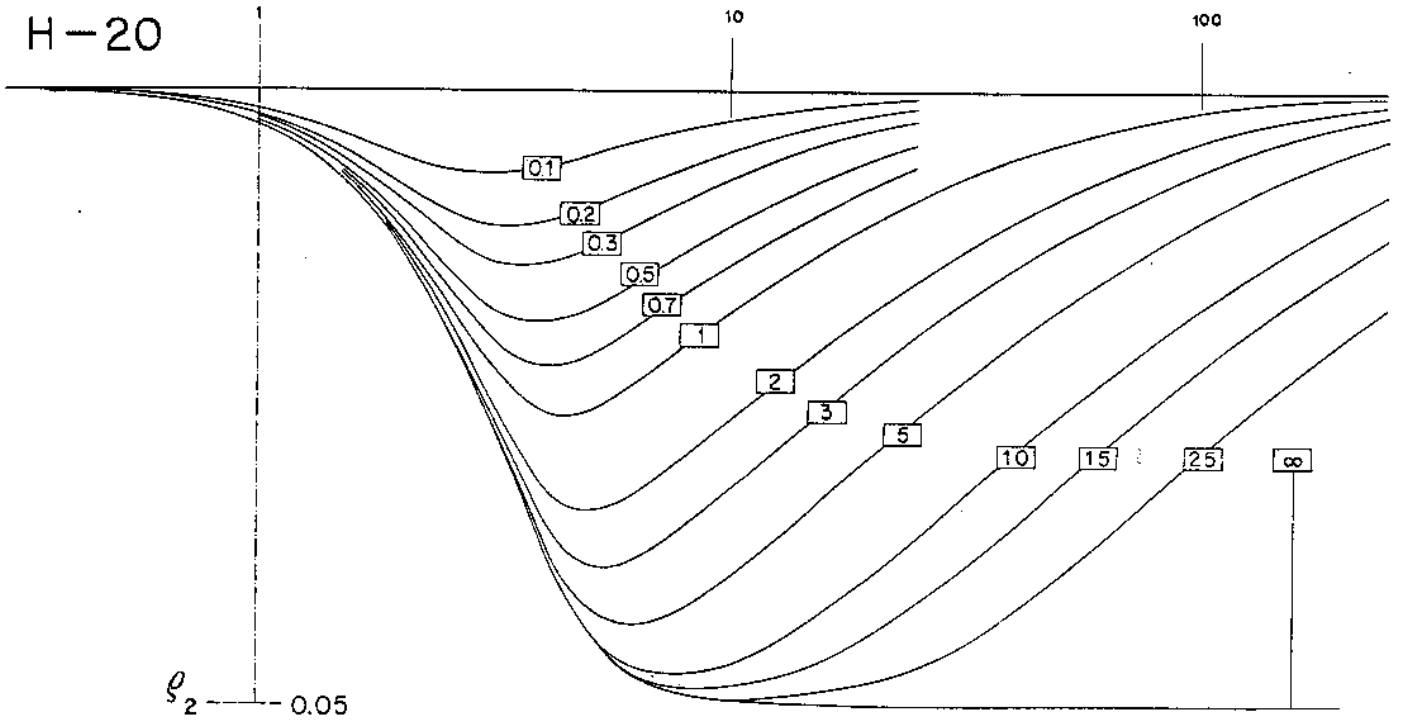
H-19

1-0.05-0.2



H-20

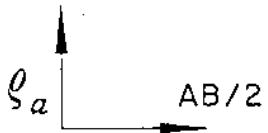
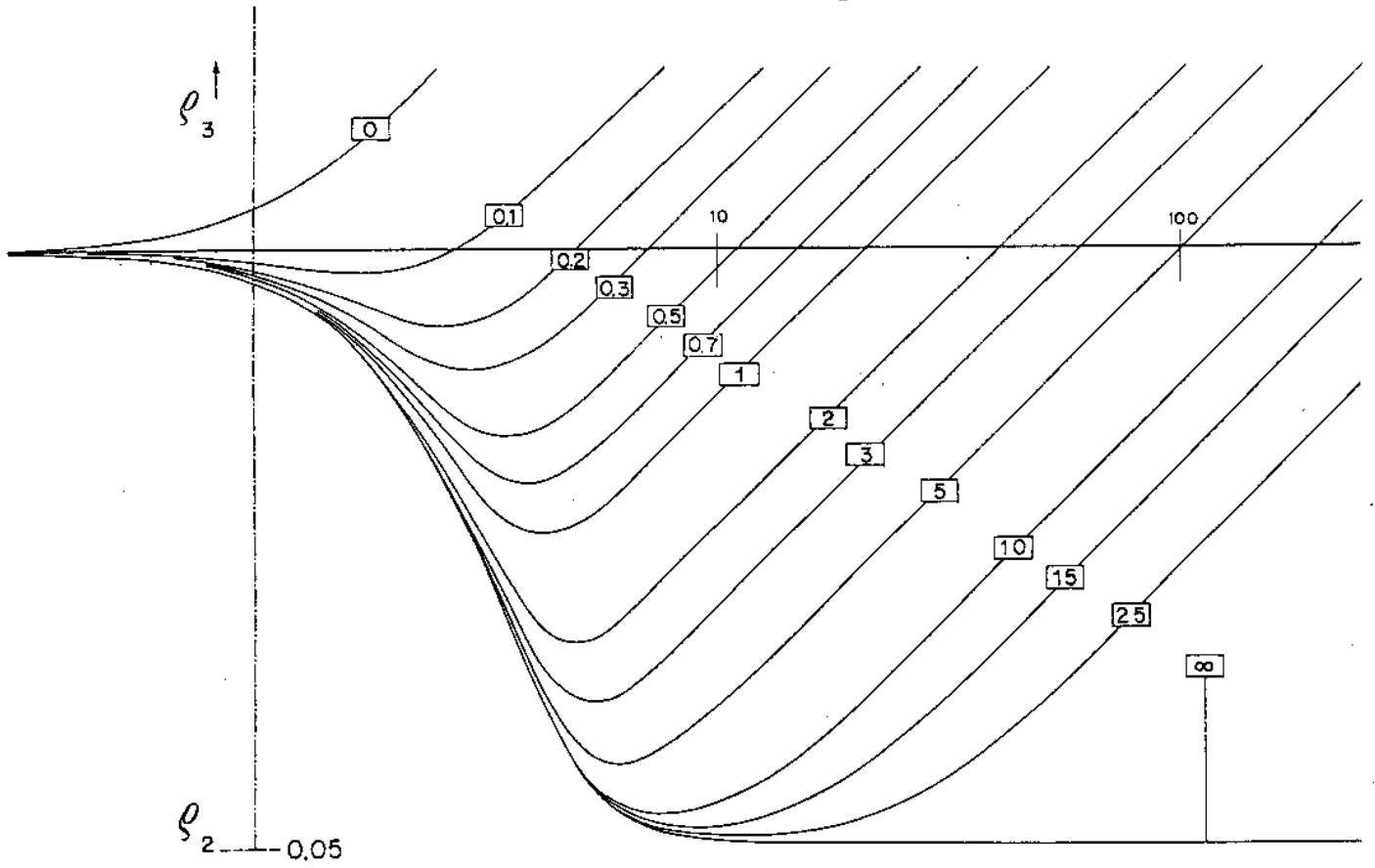
1-0.05-1



$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

H-21

1 - 0.05 - ∞

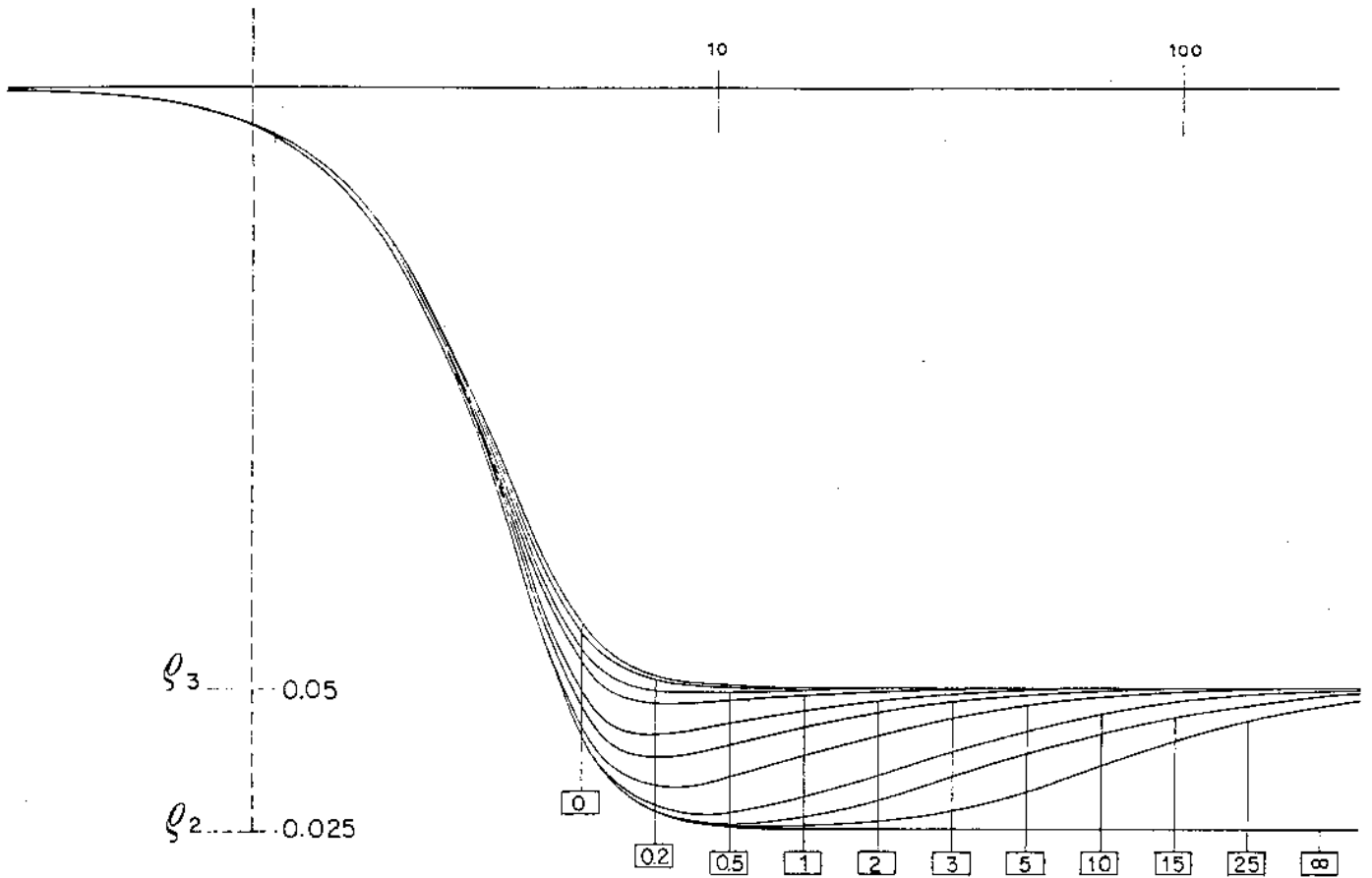


$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

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H-22

1-0.025-0.05

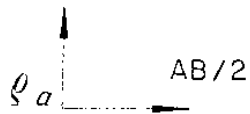
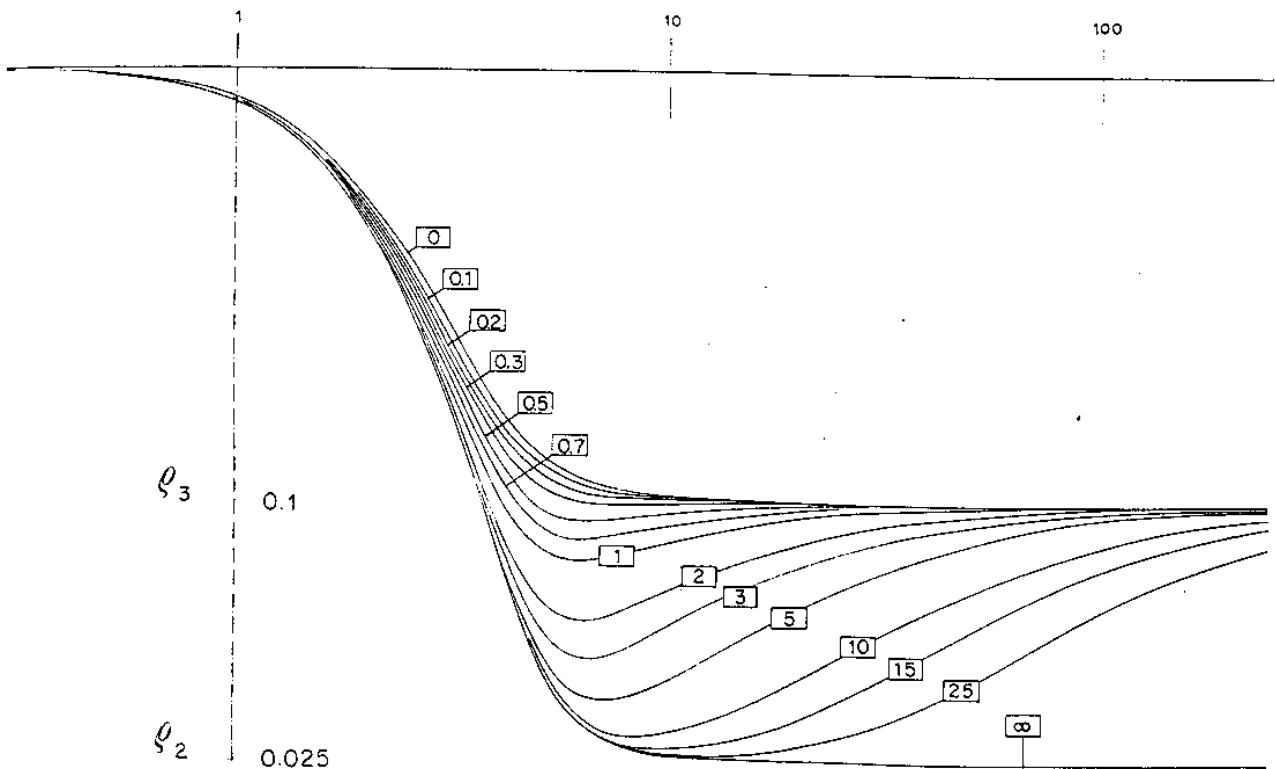


$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

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H-23

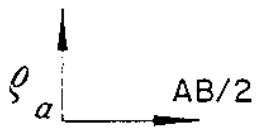
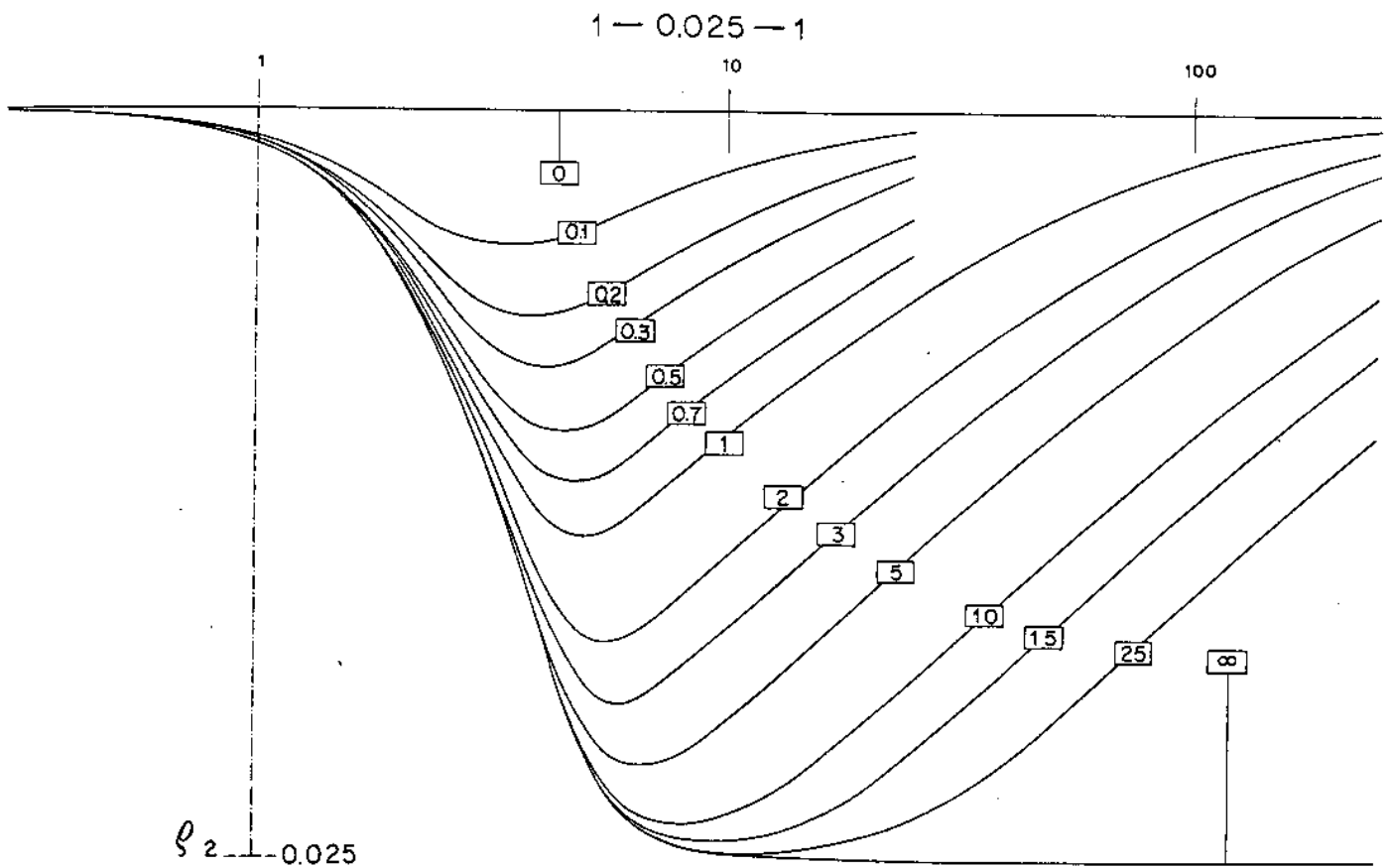
1-0.025-0.1



$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

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H-24

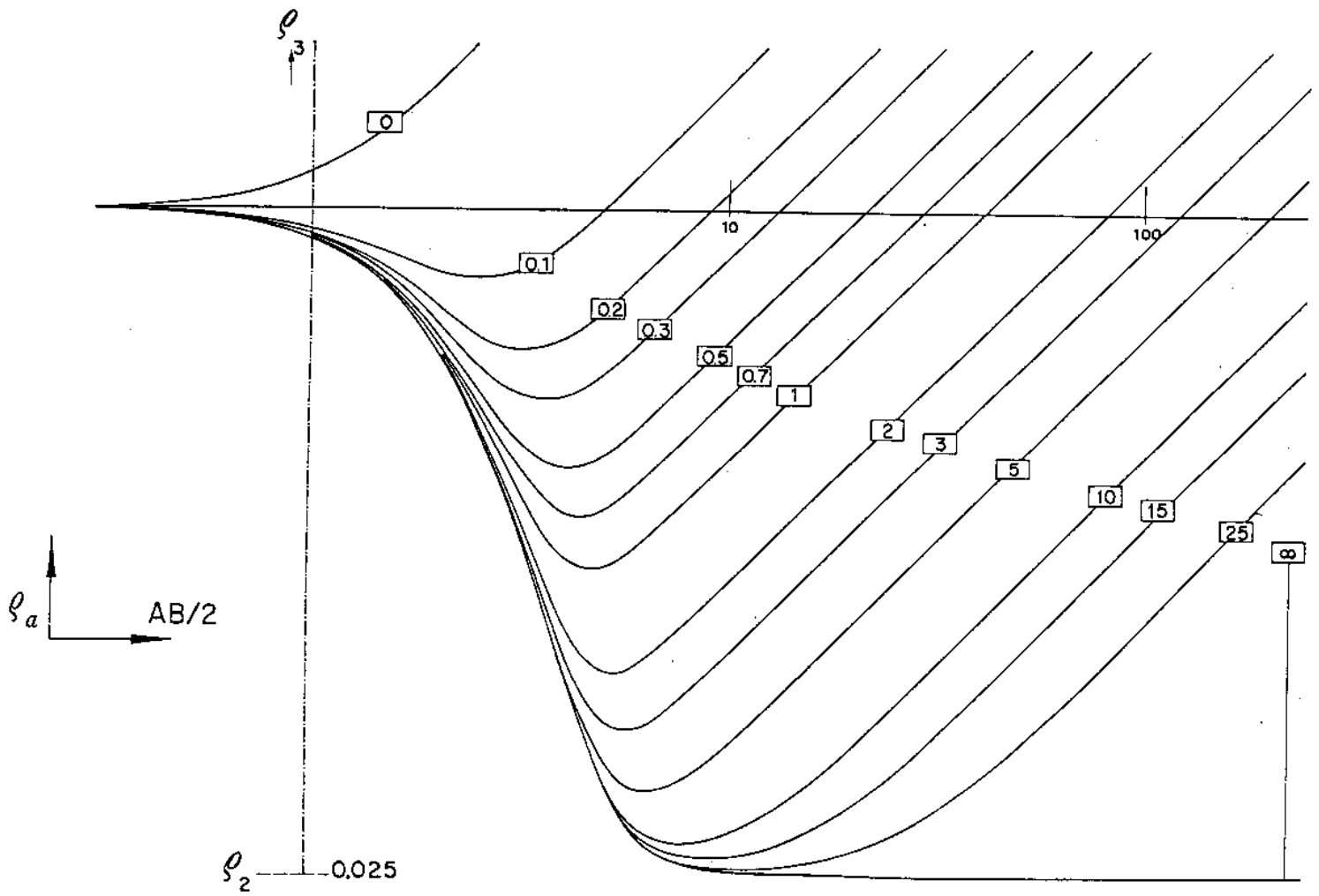


$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

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H - 25

1 - 0.025 - ∞

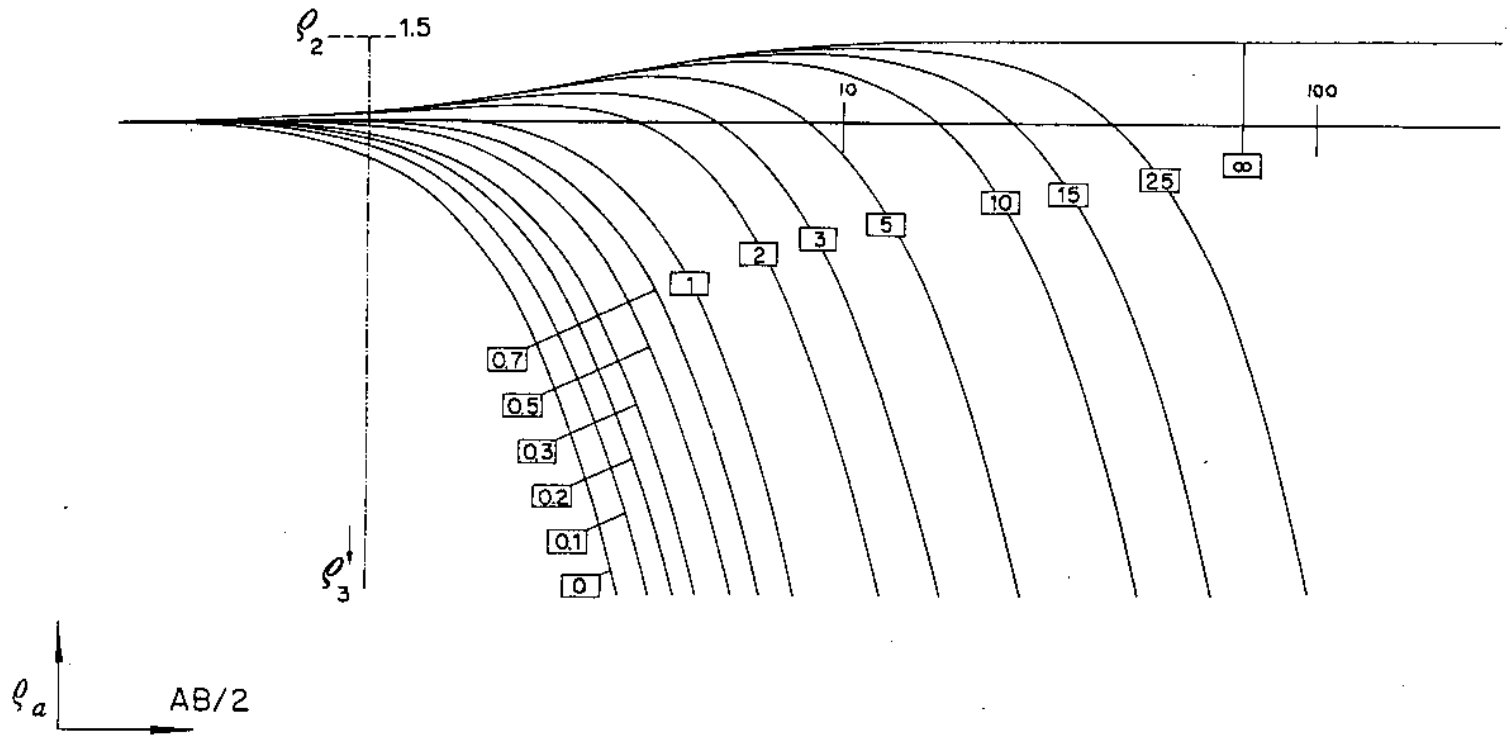


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$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

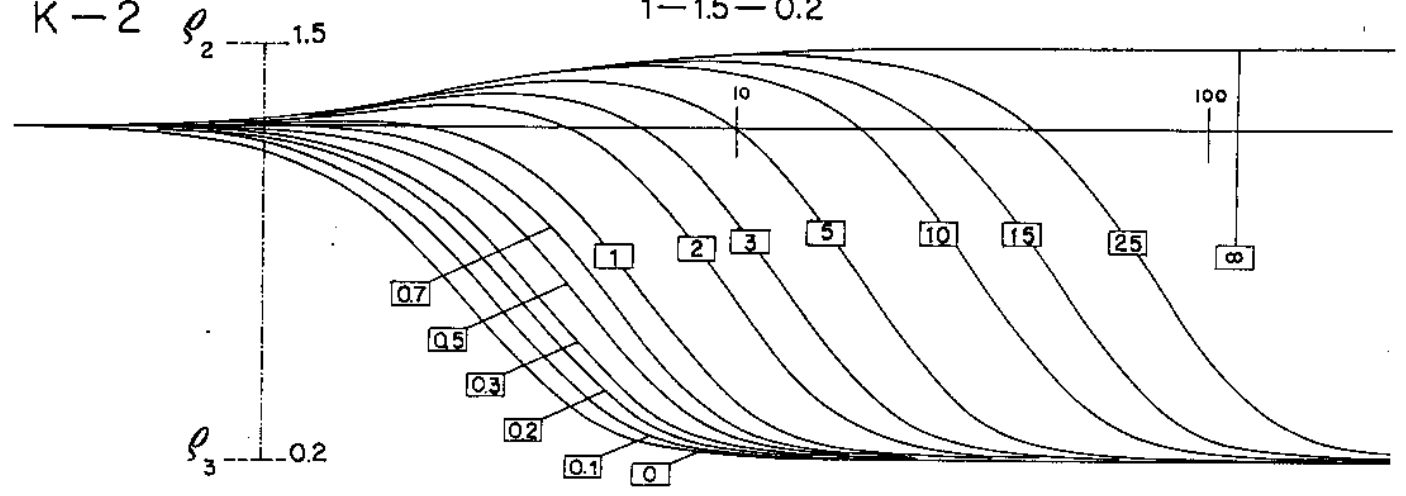
K-1

1-1.5-0



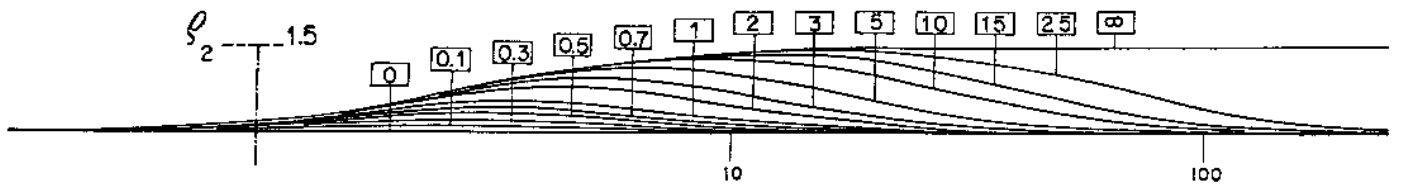
K-2

1-1.5-0.2



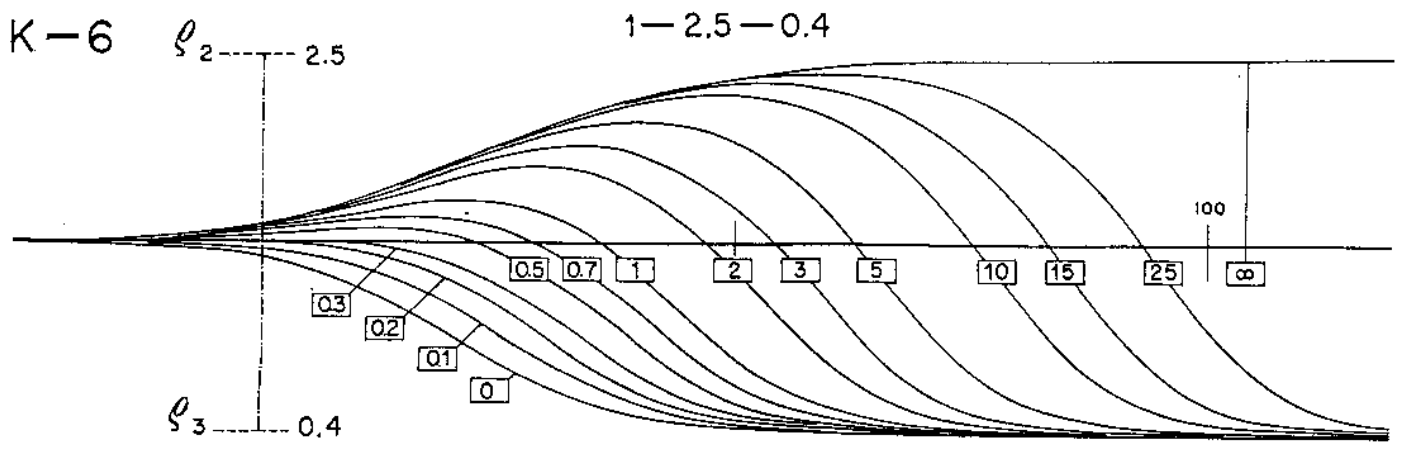
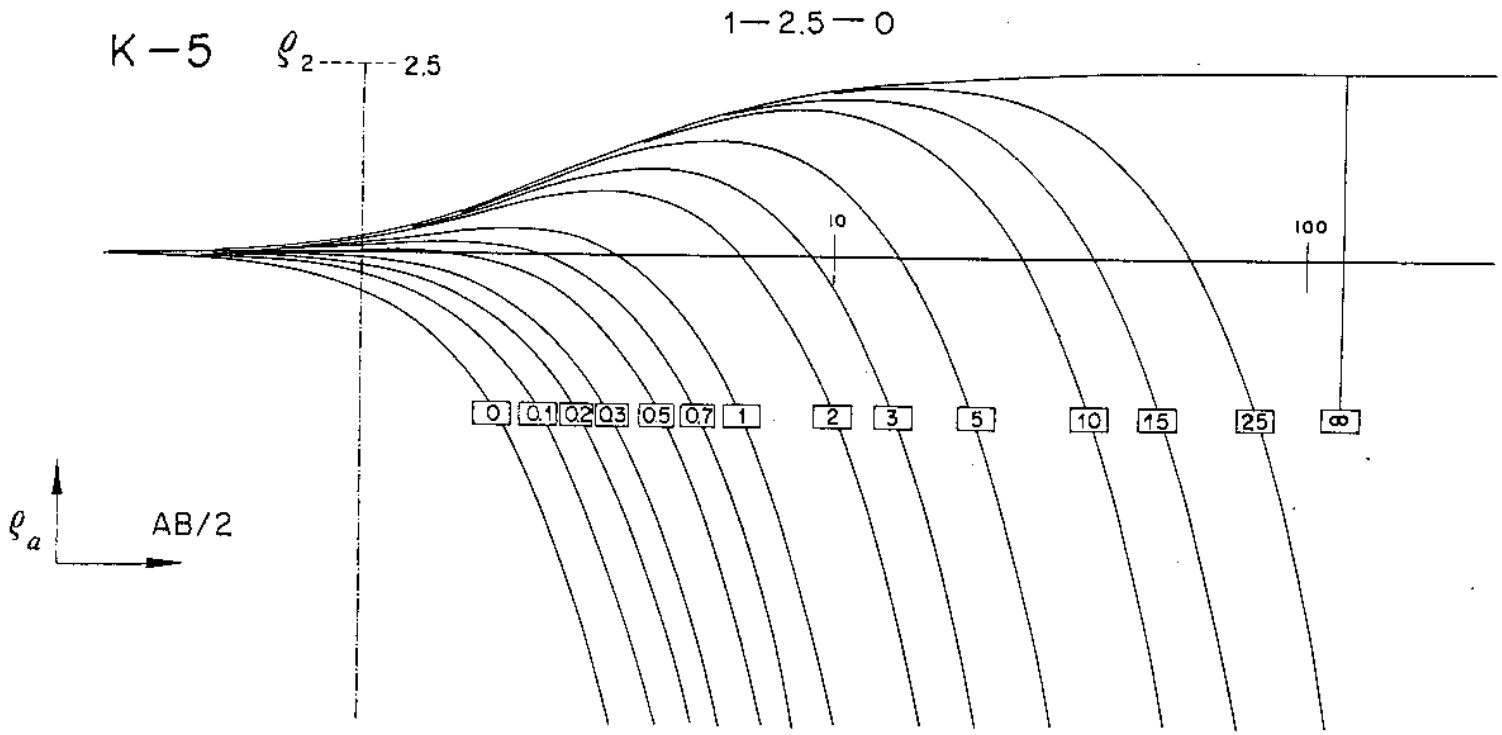
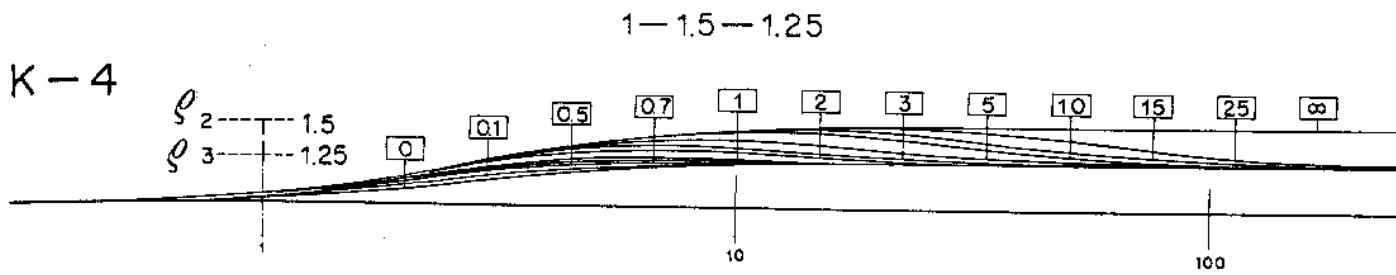
K-3

1-1.5-1



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 CURVAS PATRON PARA νs.

$$E_1 = 1; \nu_1 = 1; E_2 = \square$$

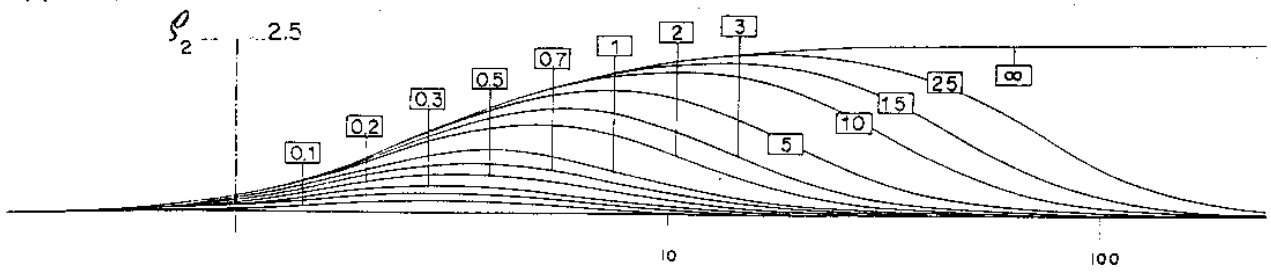


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$E_1 = 1; l_1 = 1; E_2 = \square$

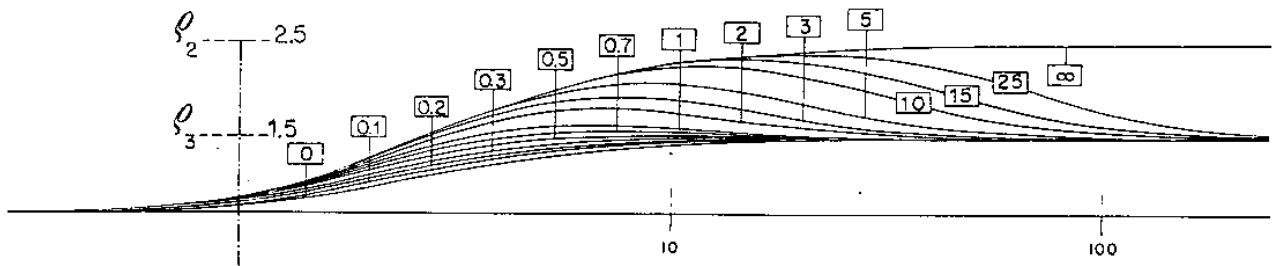
K-7

1-2.5-1



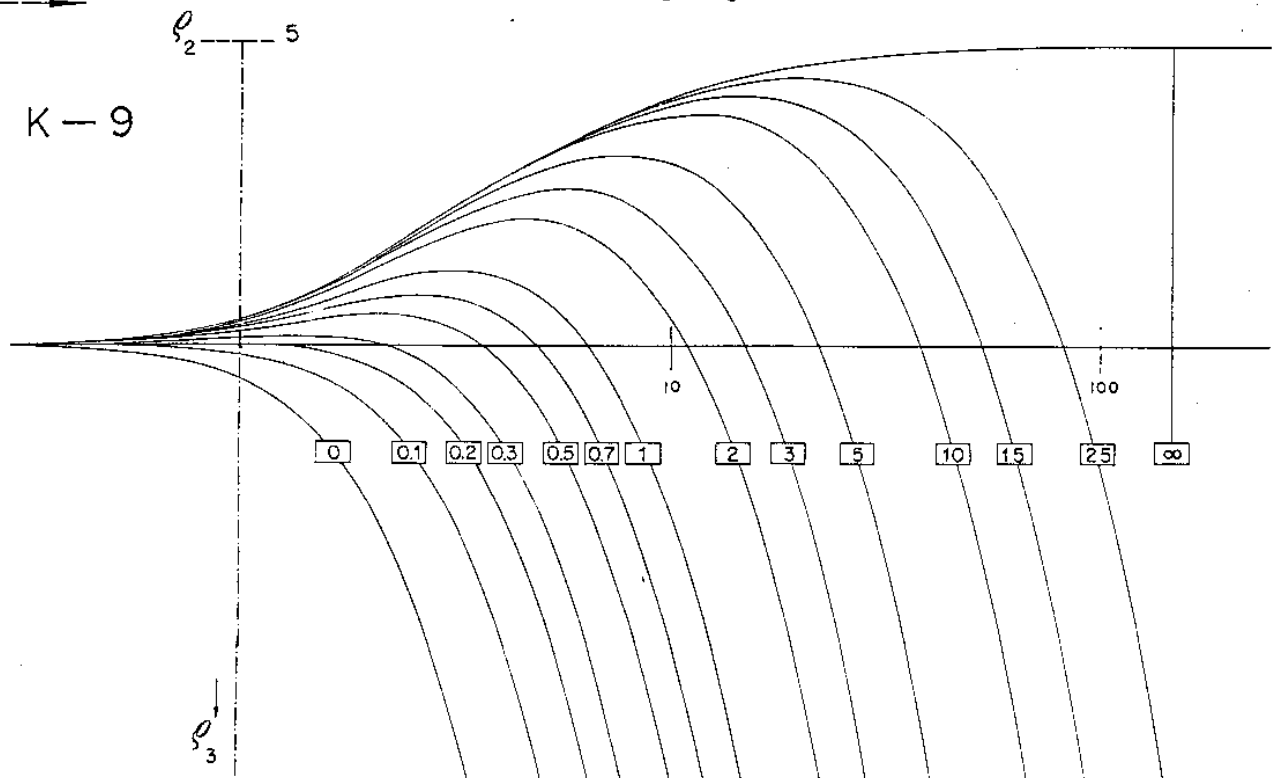
K-8

1-2.5-1.5



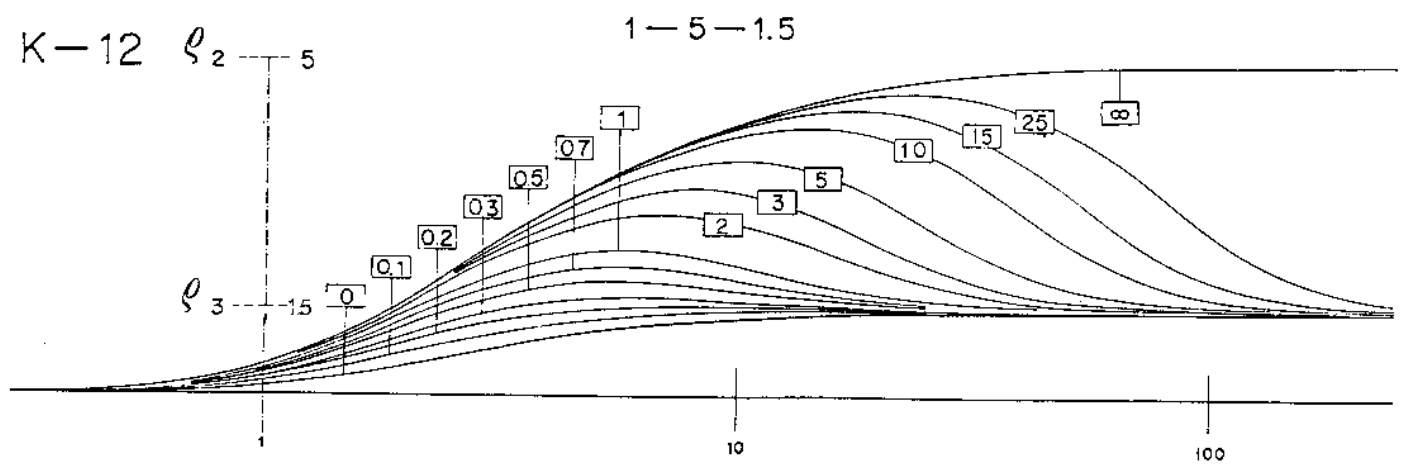
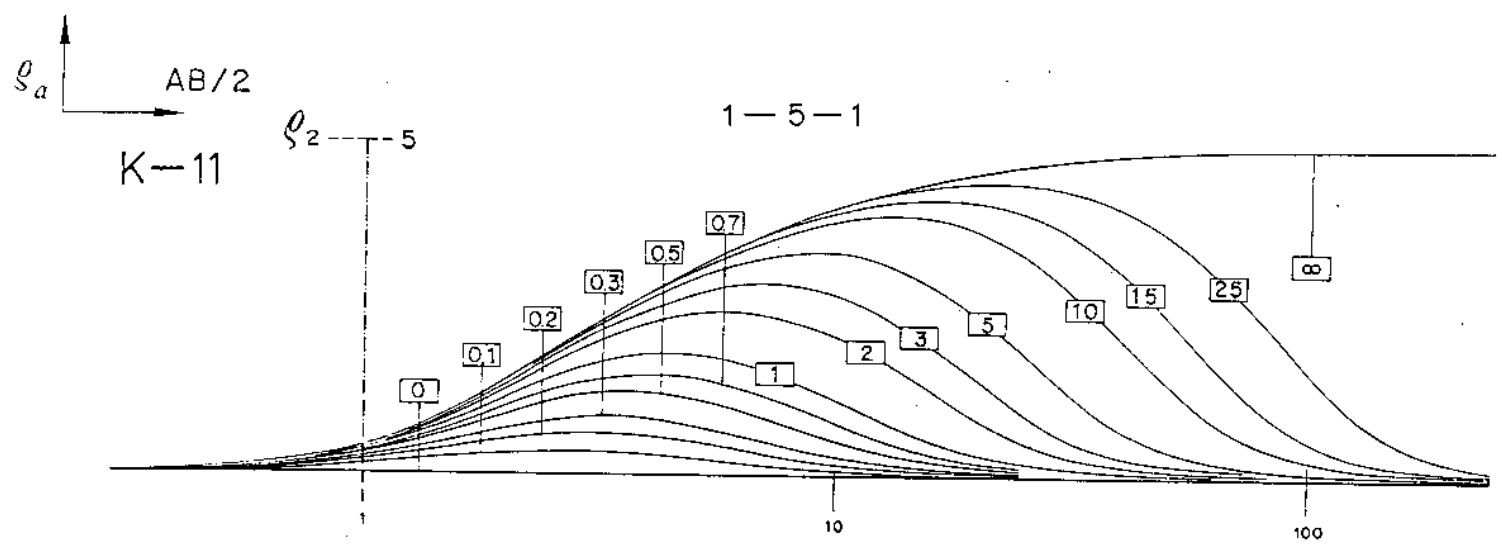
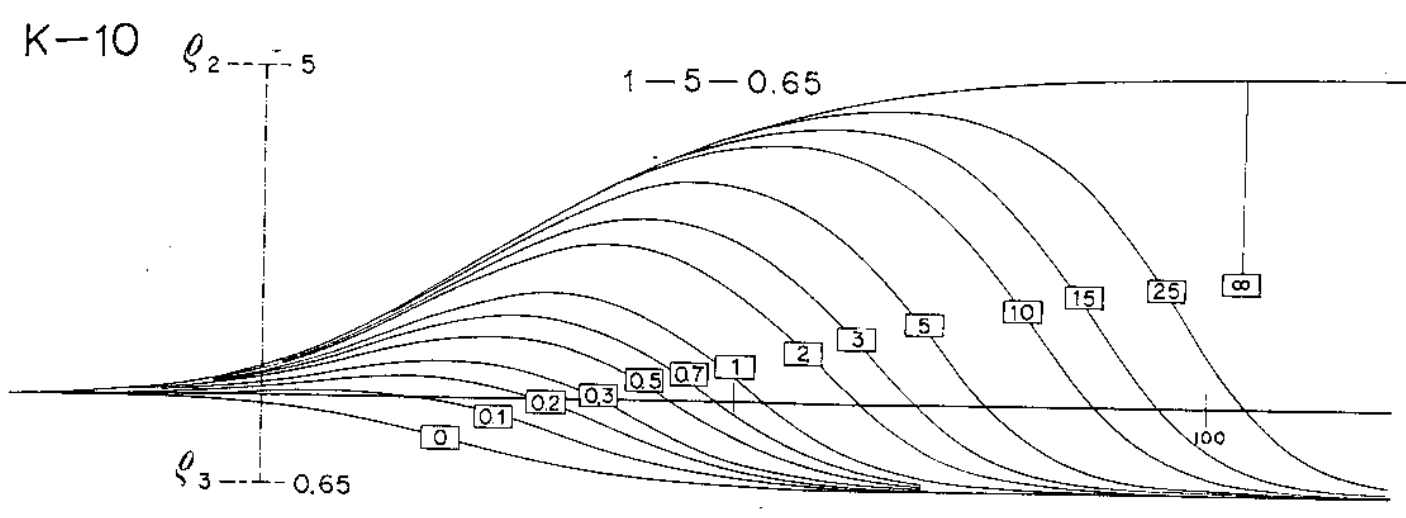
ρ_a AB/2

1-5-0



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$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

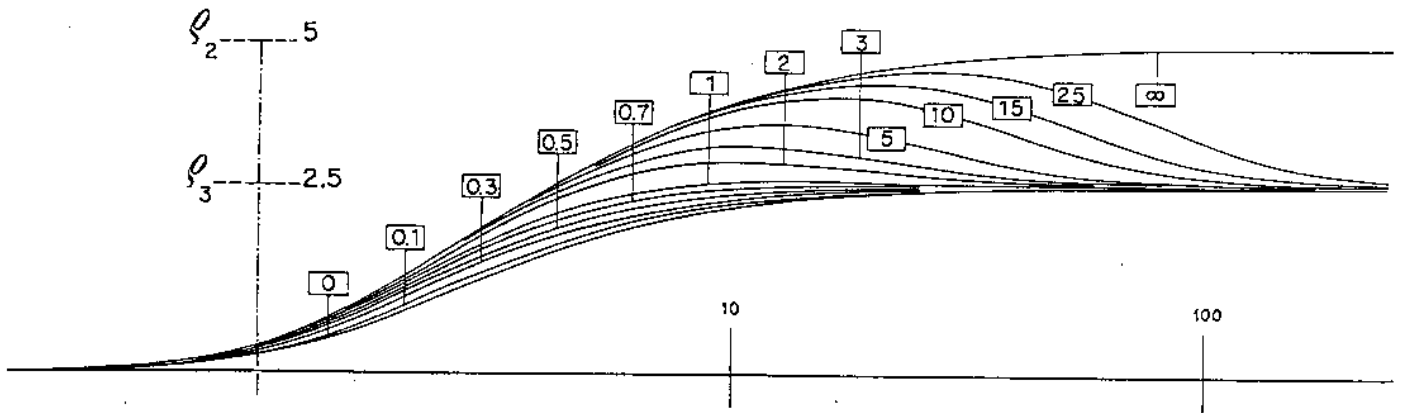


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$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

K-13

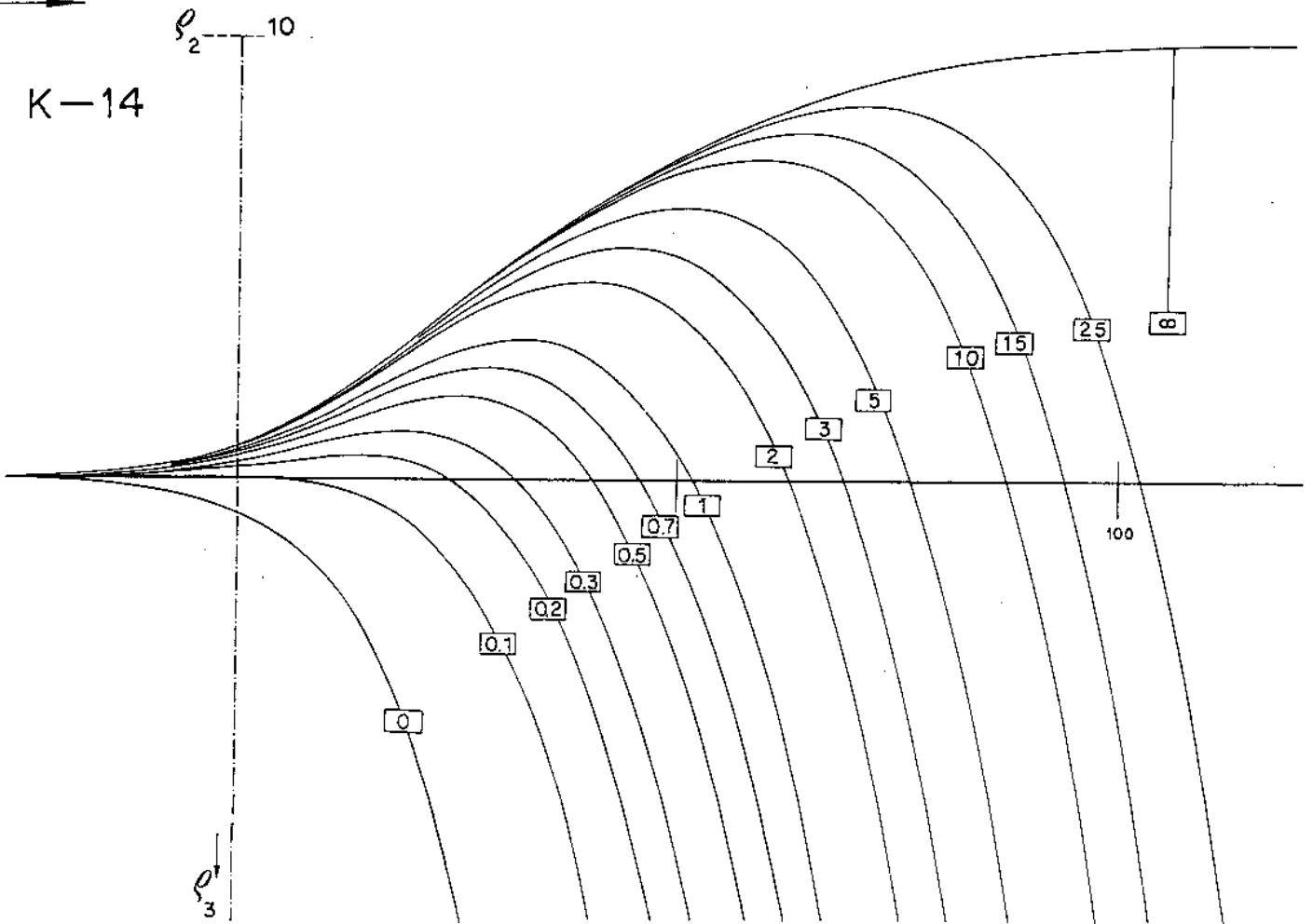
1-5-2.5



ρ_a \rightarrow AB/2

1-10-0

K-14

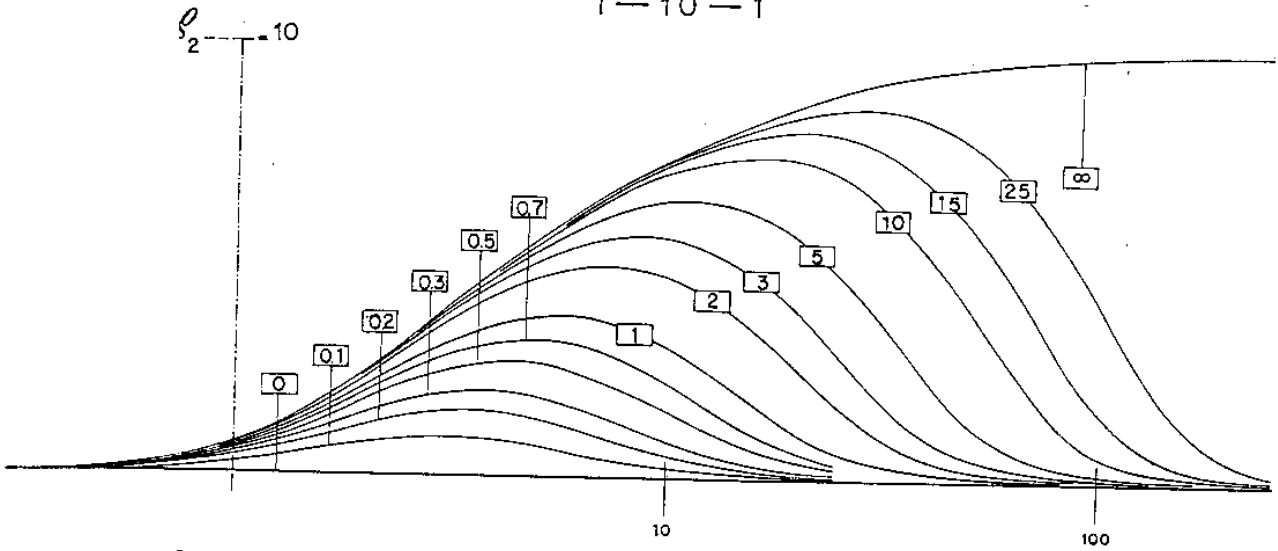


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$E_1 = 1; \rho_1 = 1; E_2 = \square$

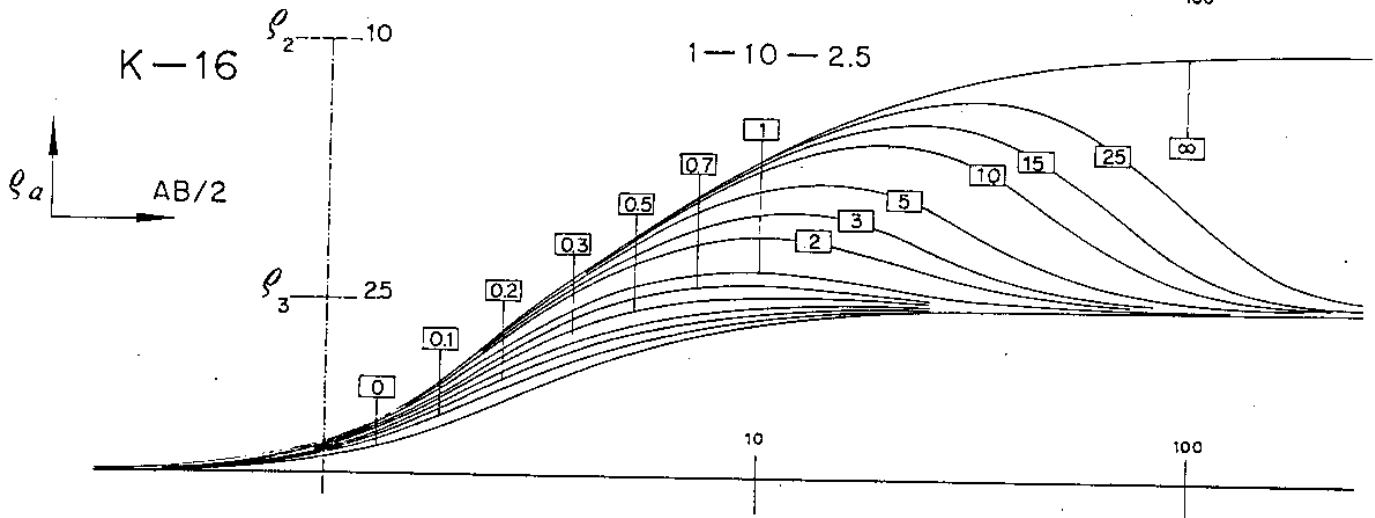
K-15

1-10-1



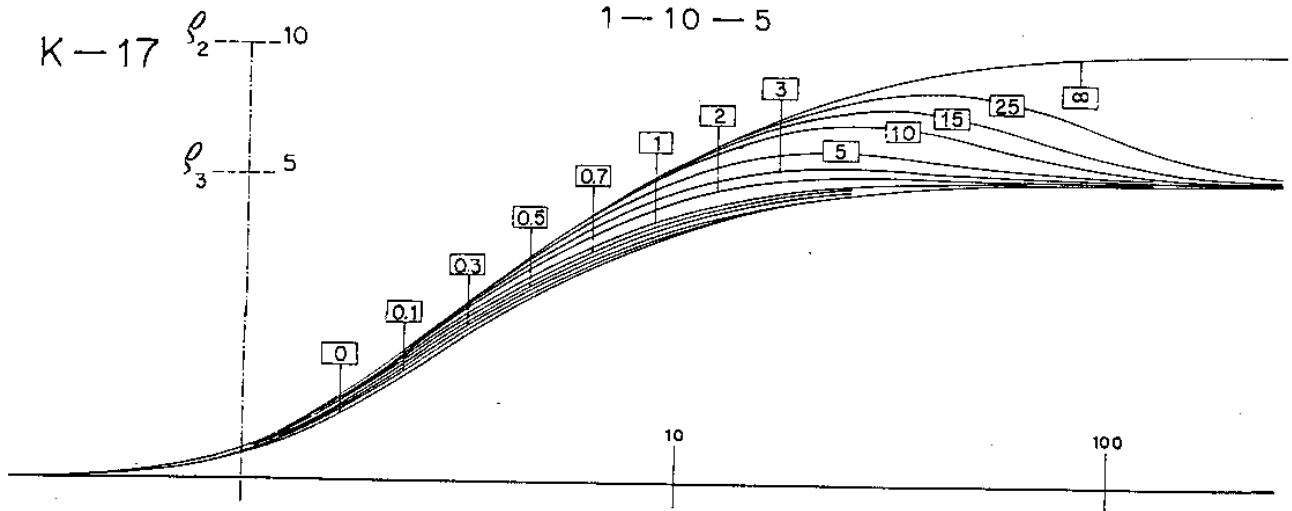
K-16

1-10-2.5



K-17

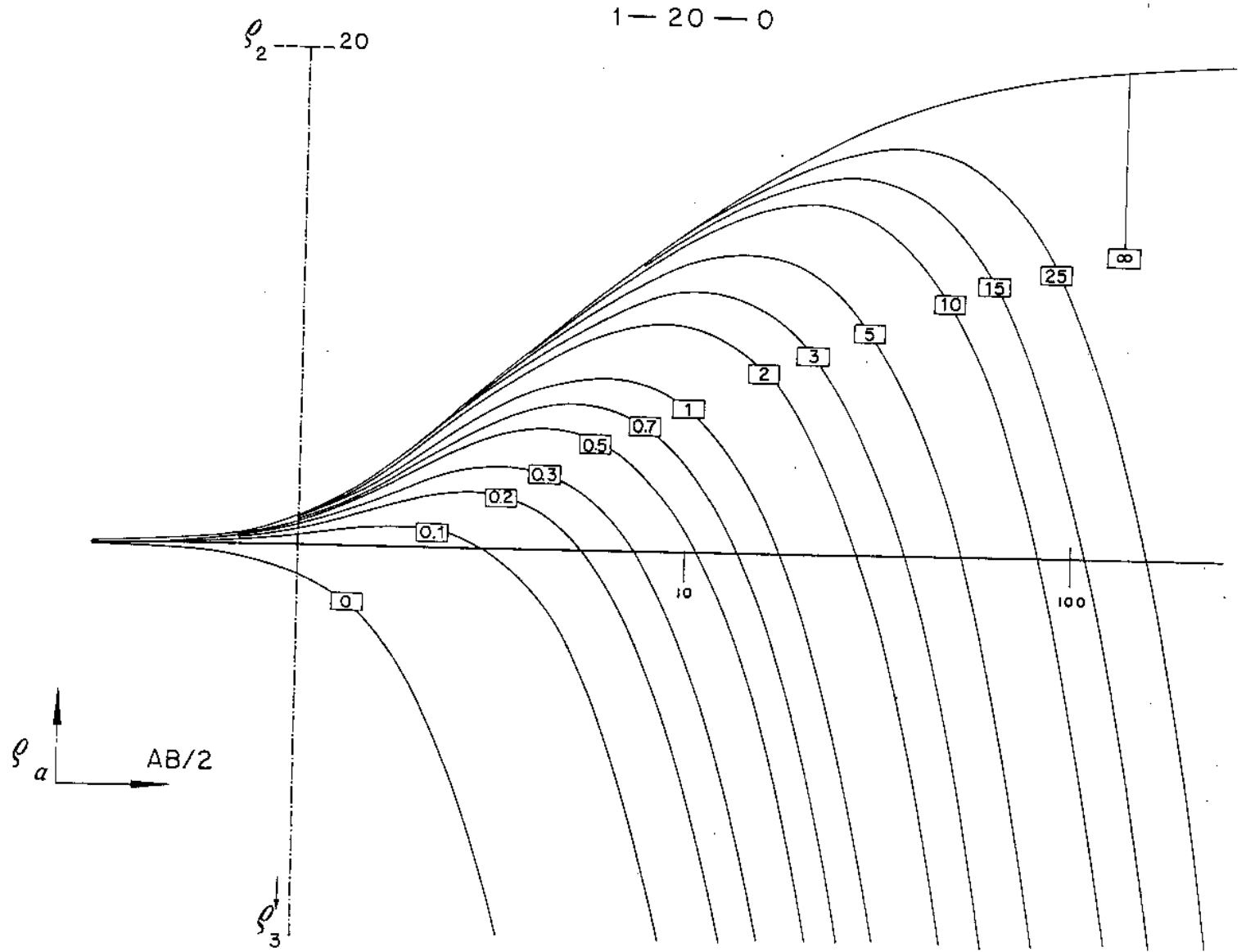
1-10-5



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$$E_1 = 1; \nu_1 = 1; E_2 = \square$$

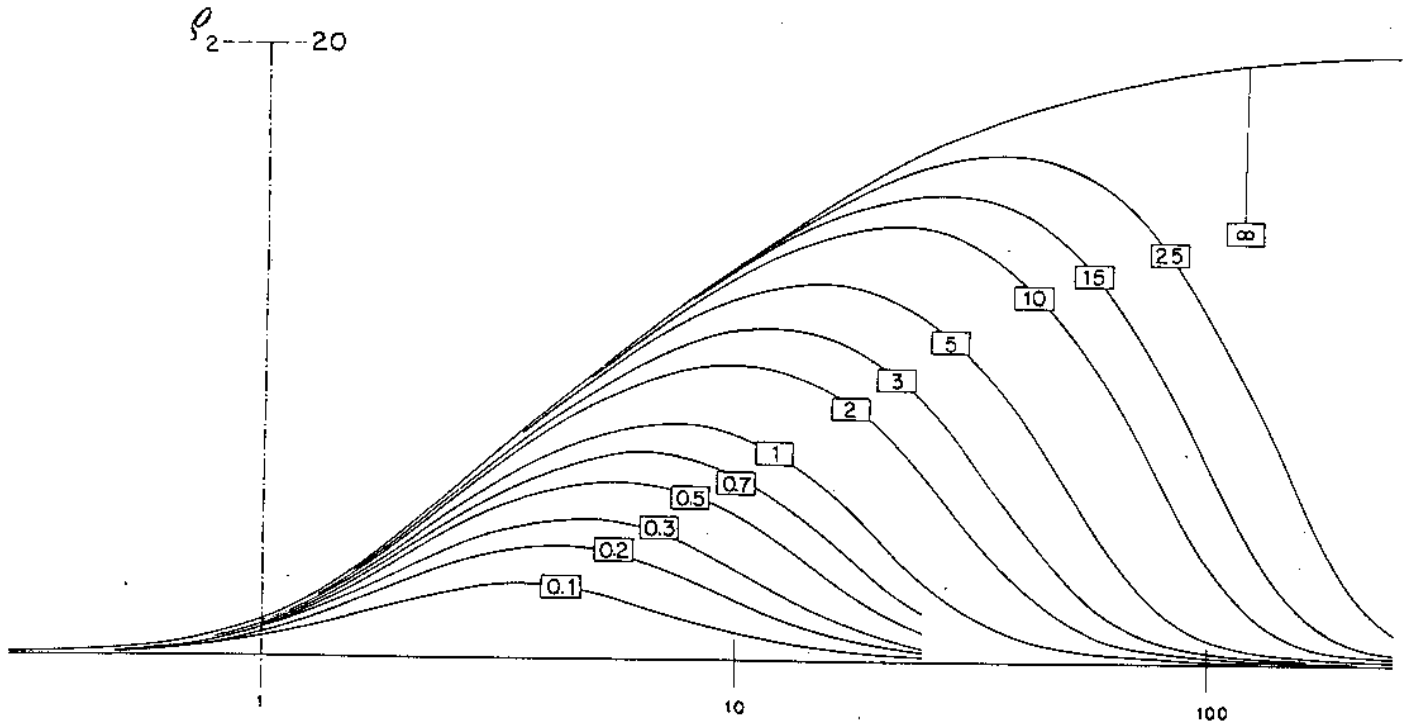
K-18



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K-19

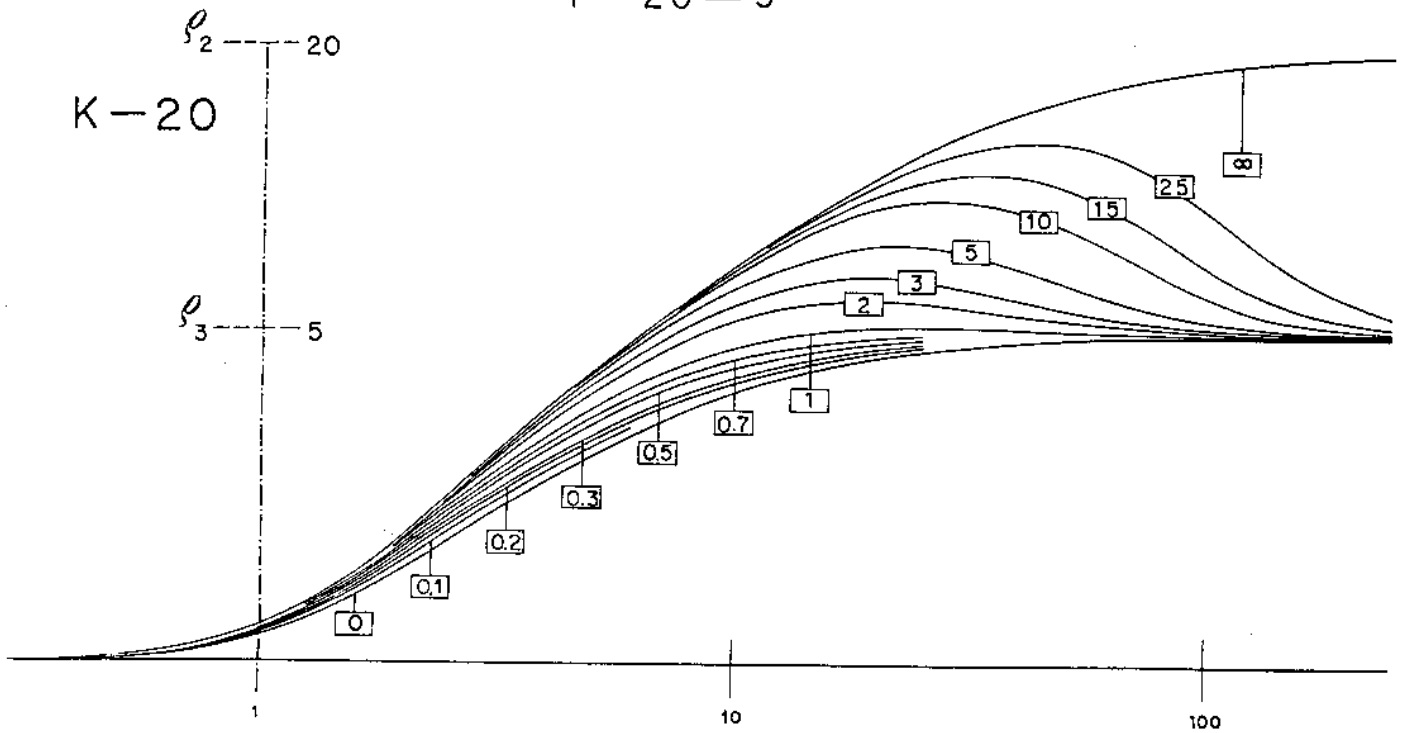
1-20-1



ρ_a
AB/2

1-20-5

K-20

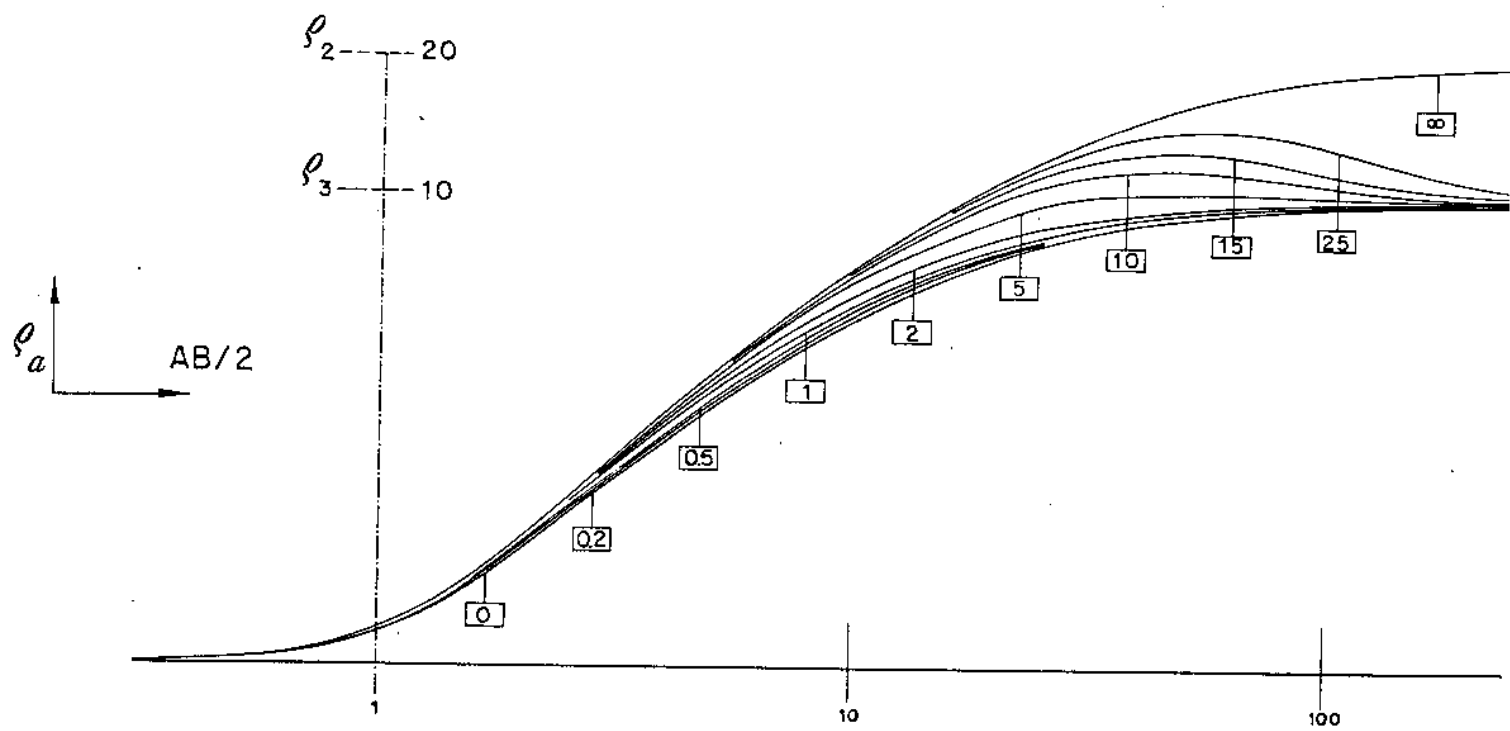


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$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

K-21

1-20-10

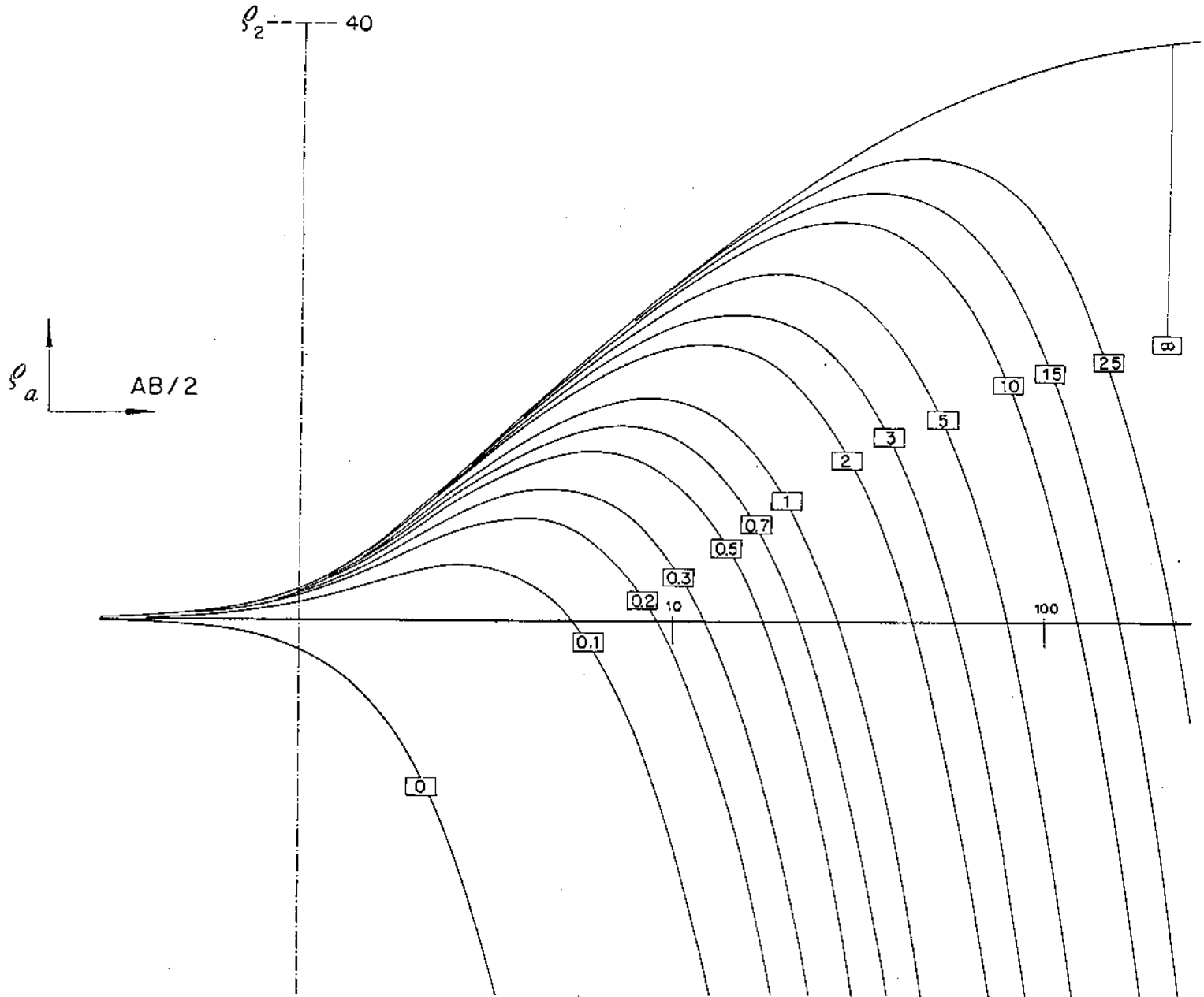


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$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

K-22

1-40-0

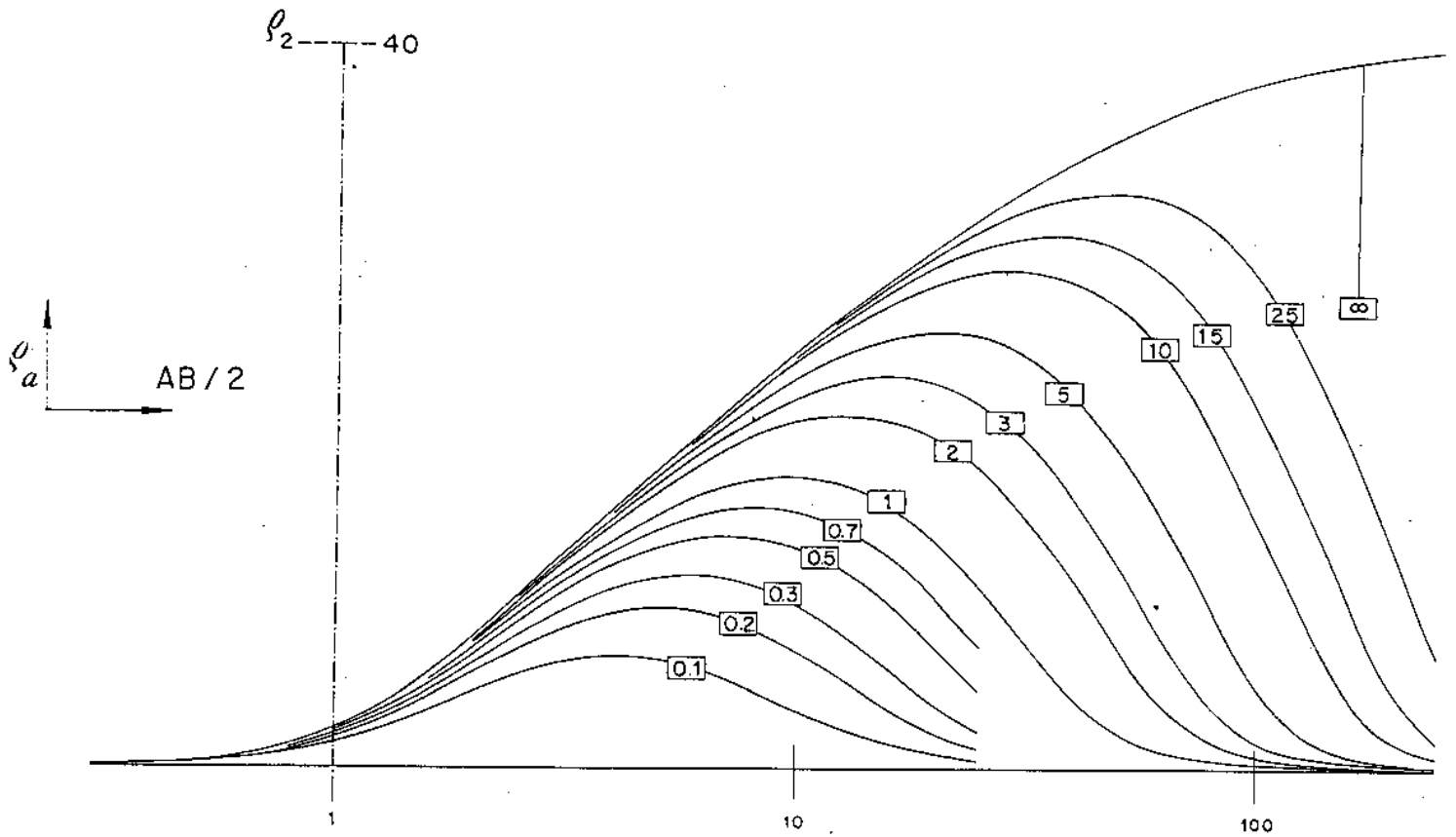


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$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

K-23

1-40-1

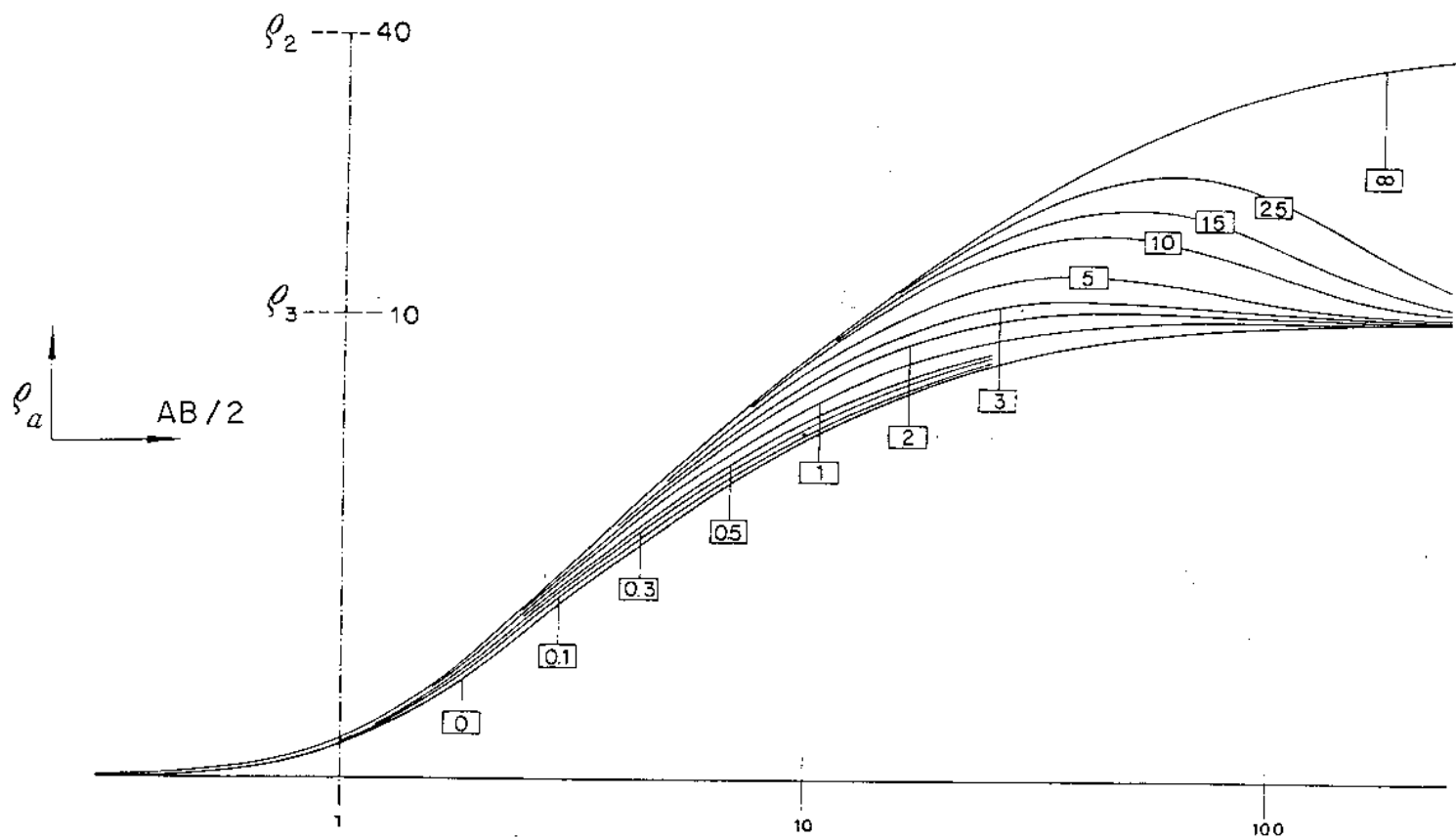


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$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

K-2.4

1-40-10

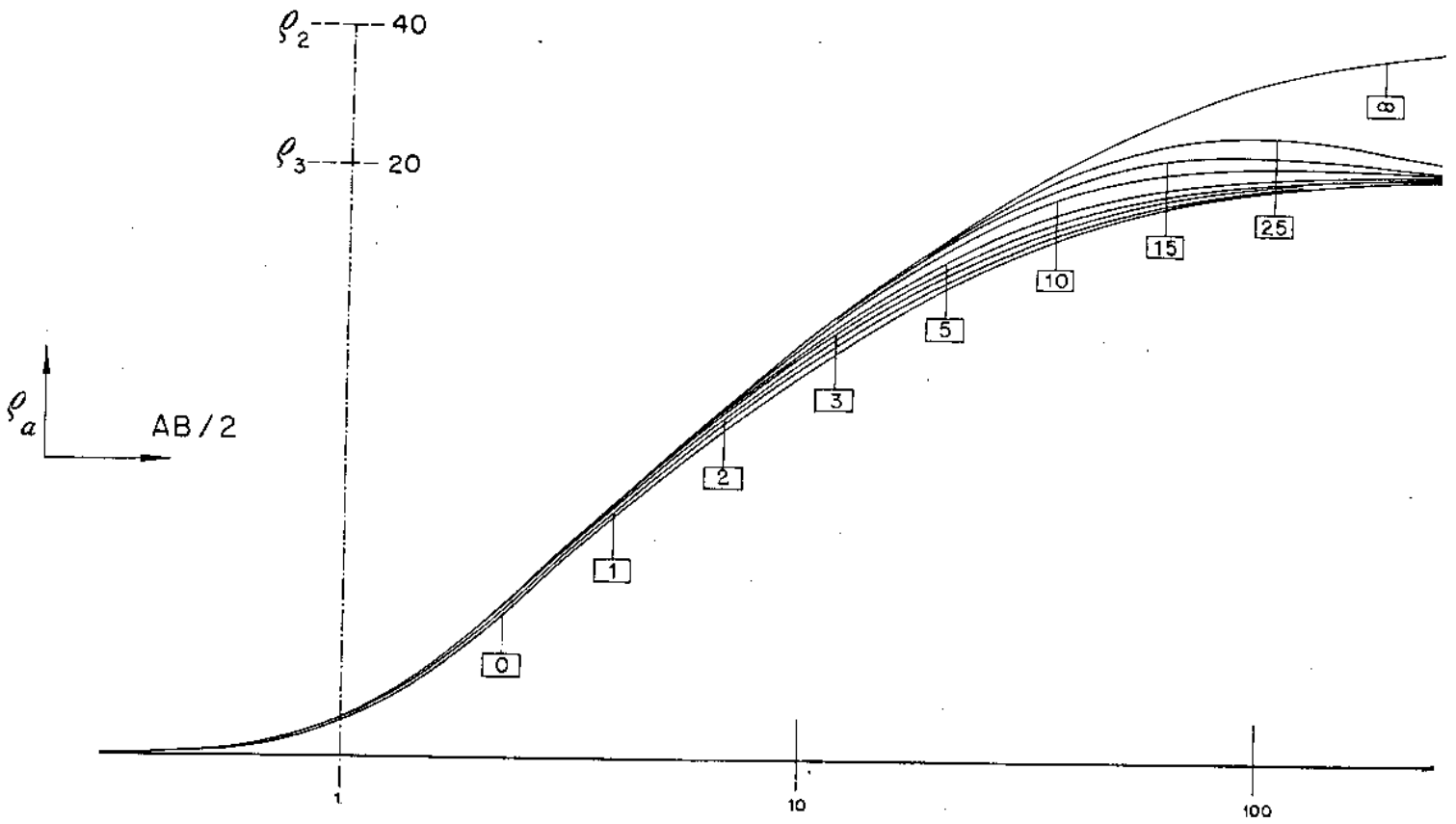


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$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

K-25

1-40-20

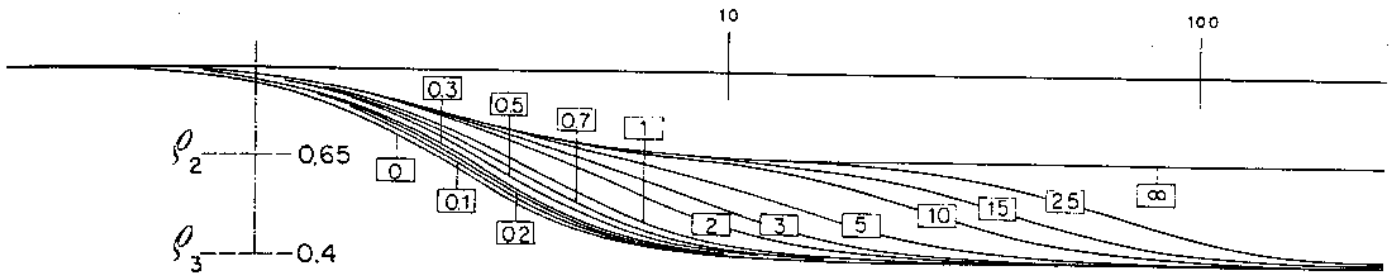


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CURVAS PATRON PARA SEV.

$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

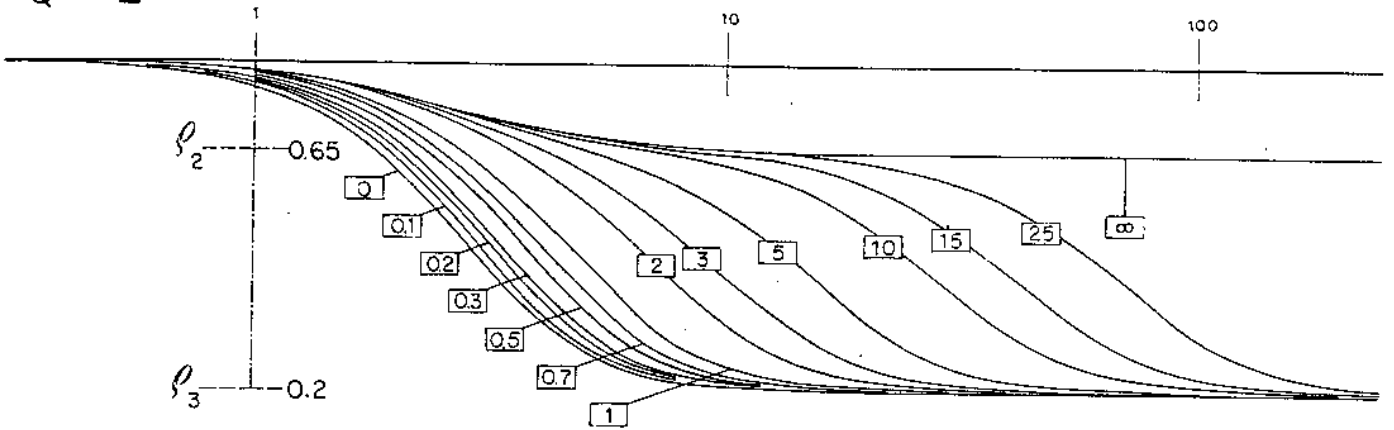
Q-1

1-0.65-0.4



Q-2

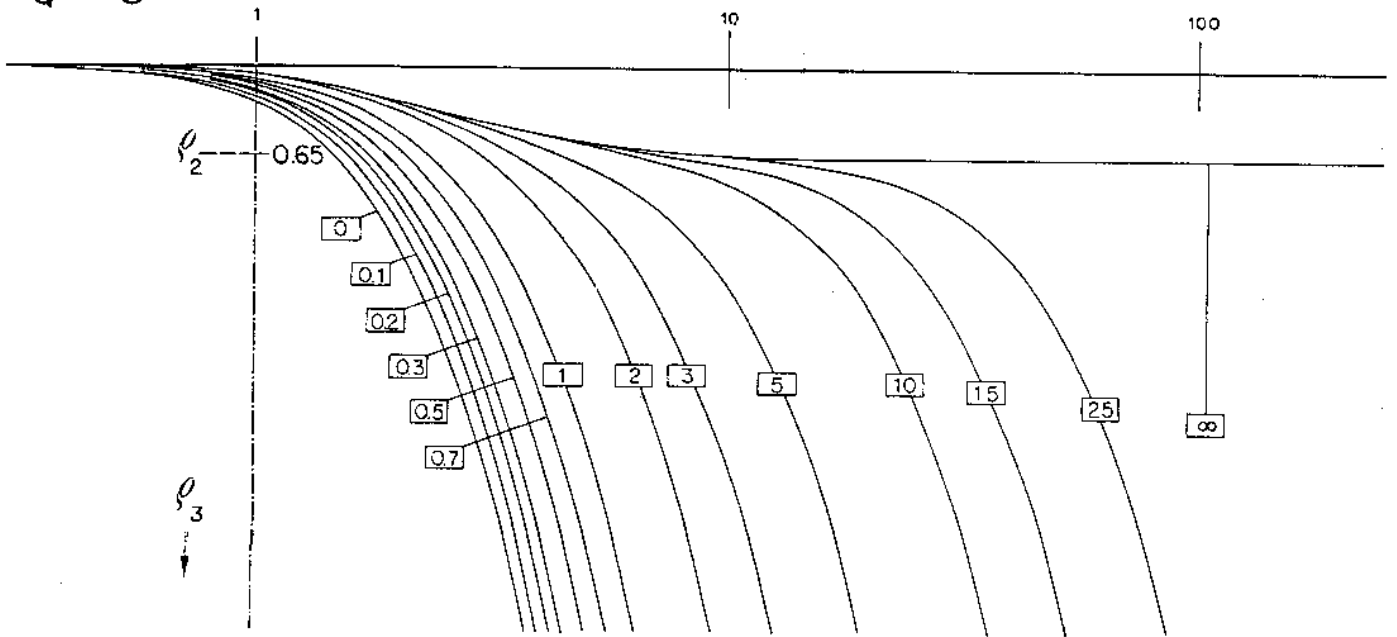
1-0.65-0.2



ρ_a AB/2

Q-3

1-0.65-0

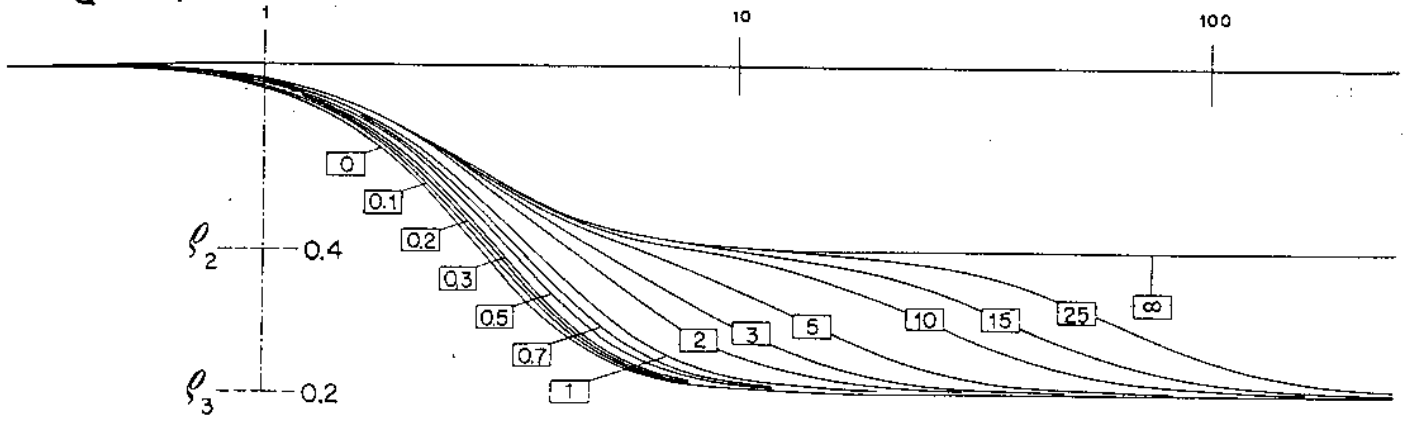


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$E_1 = 1; \rho_1 = 1; E_2 = \square$

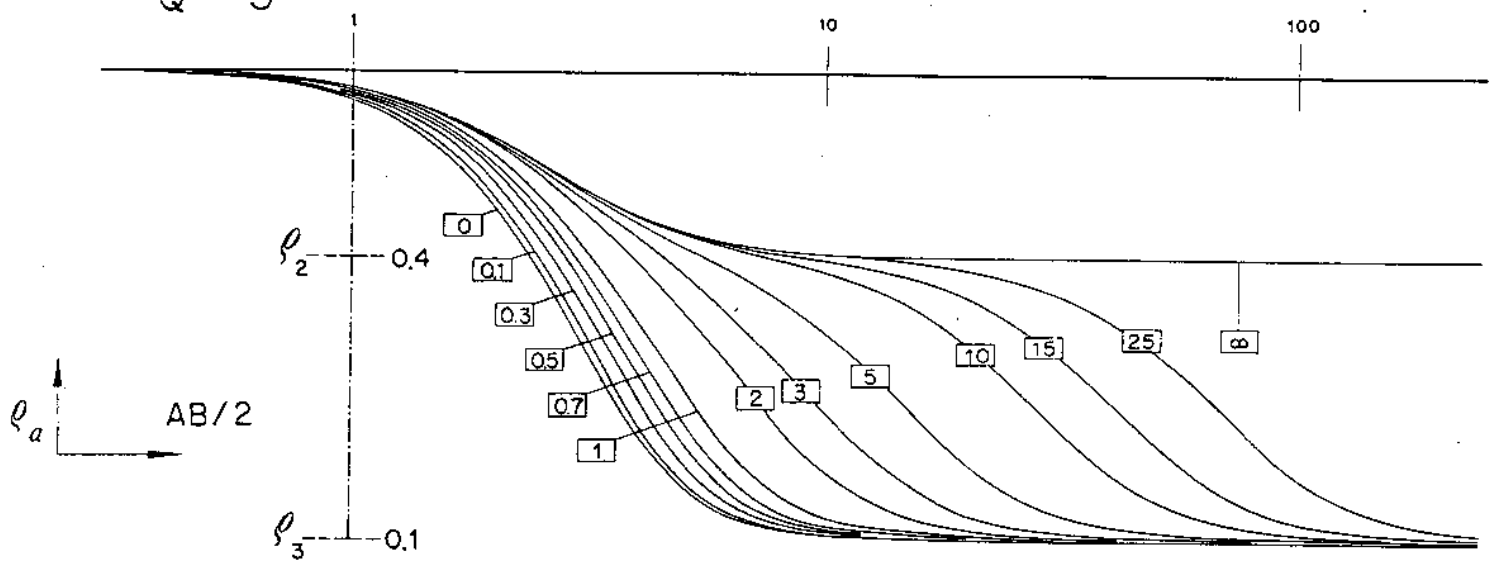
Q-4

1-0.4-0.2



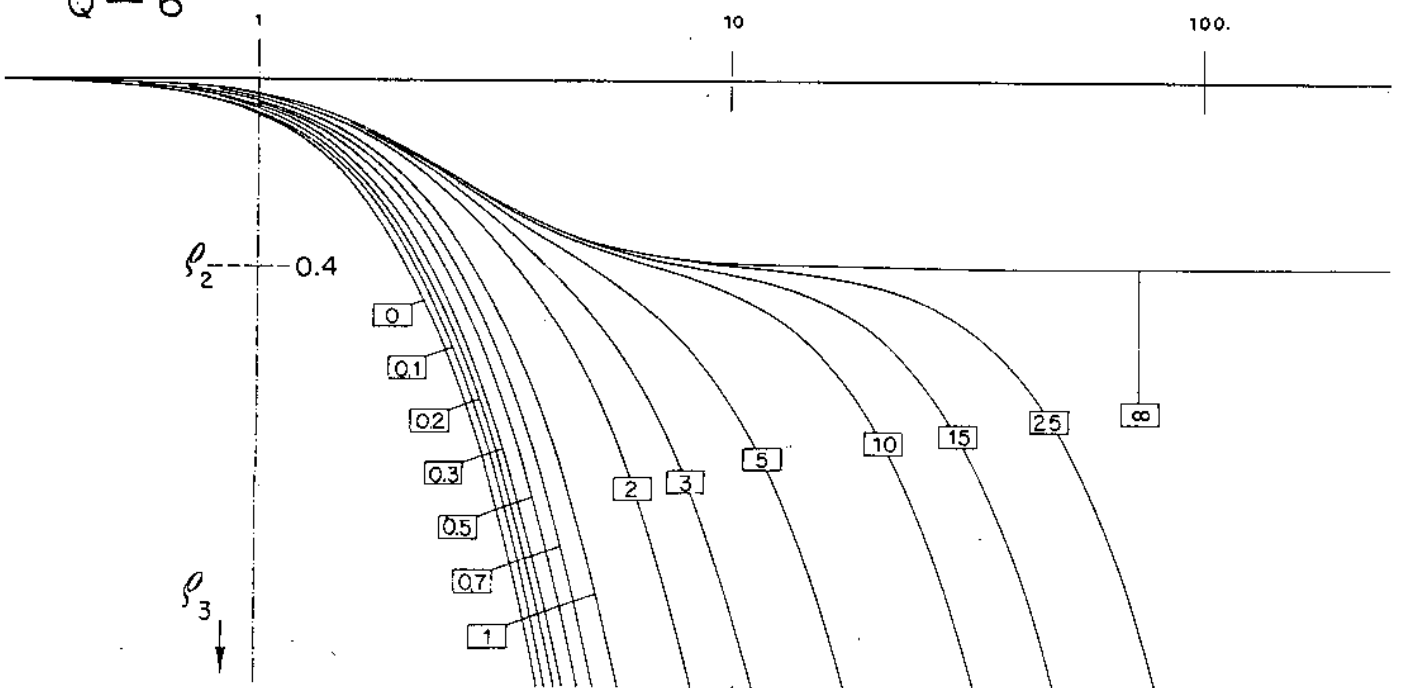
Q-5

1-0.4-0.1



Q-6

1-0.4-0

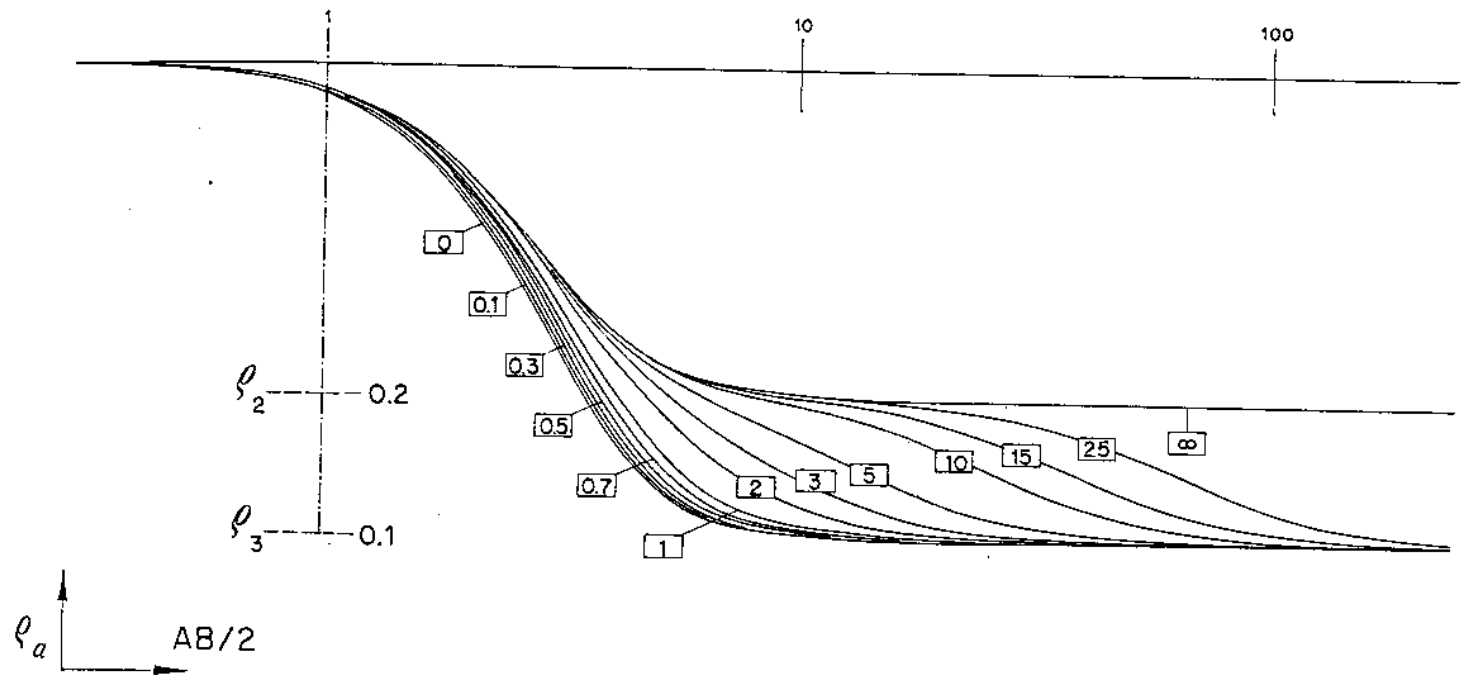


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CURVAS PATRON PARA SEV.

$E_1 = 1; \rho_1 = 1; E_2 = \square$

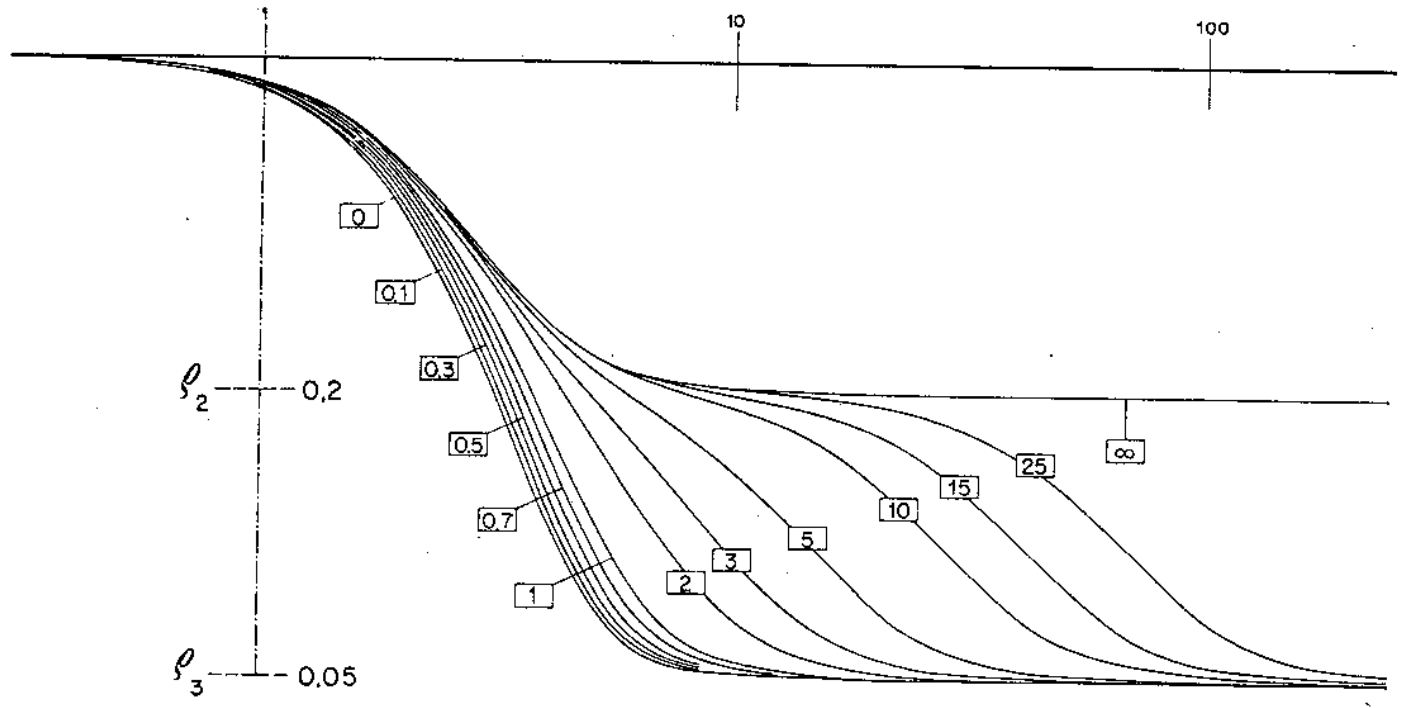
Q-7

1-0.2-0.1



Q-8

1-0.2-0.05

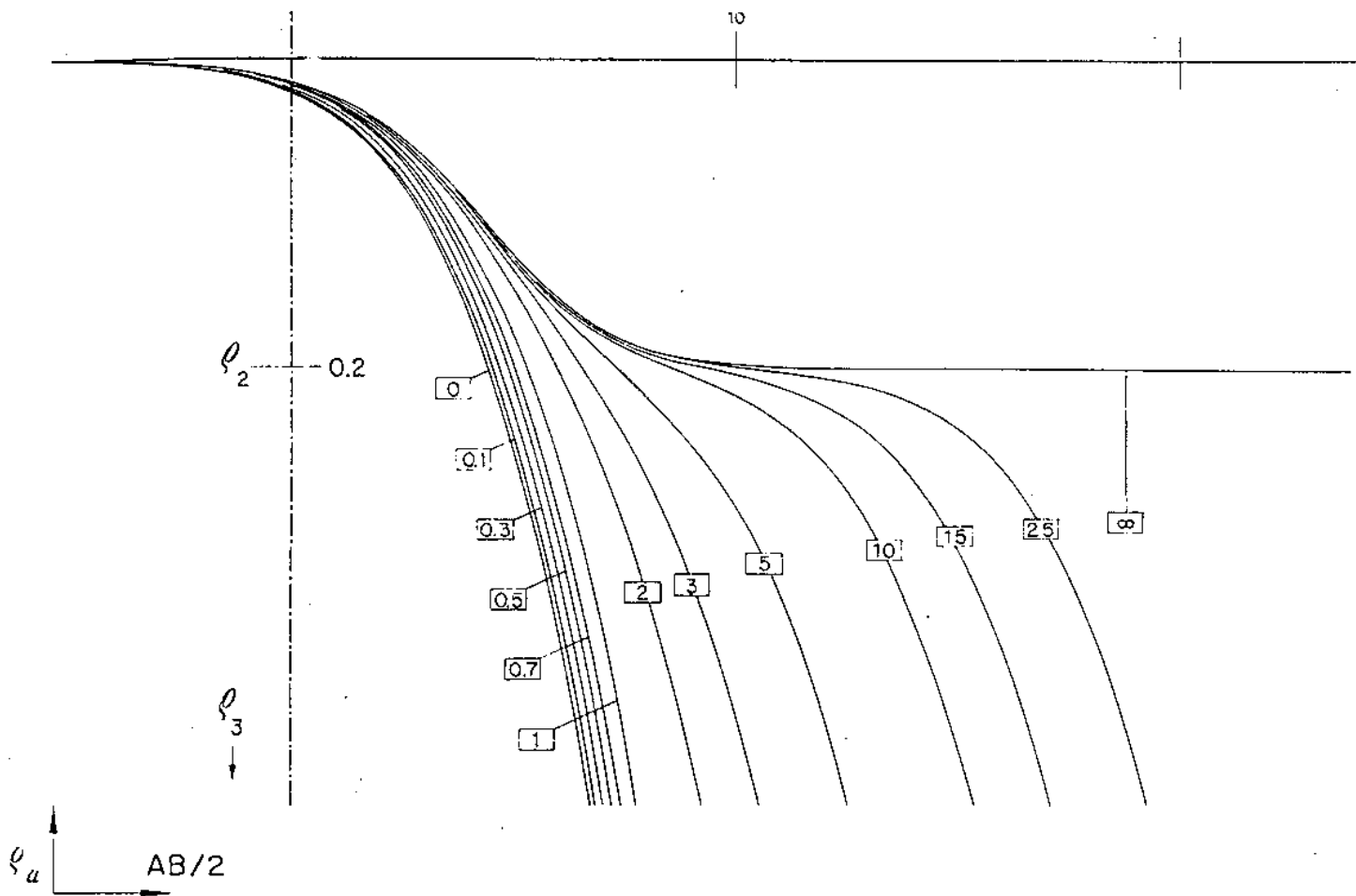


$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

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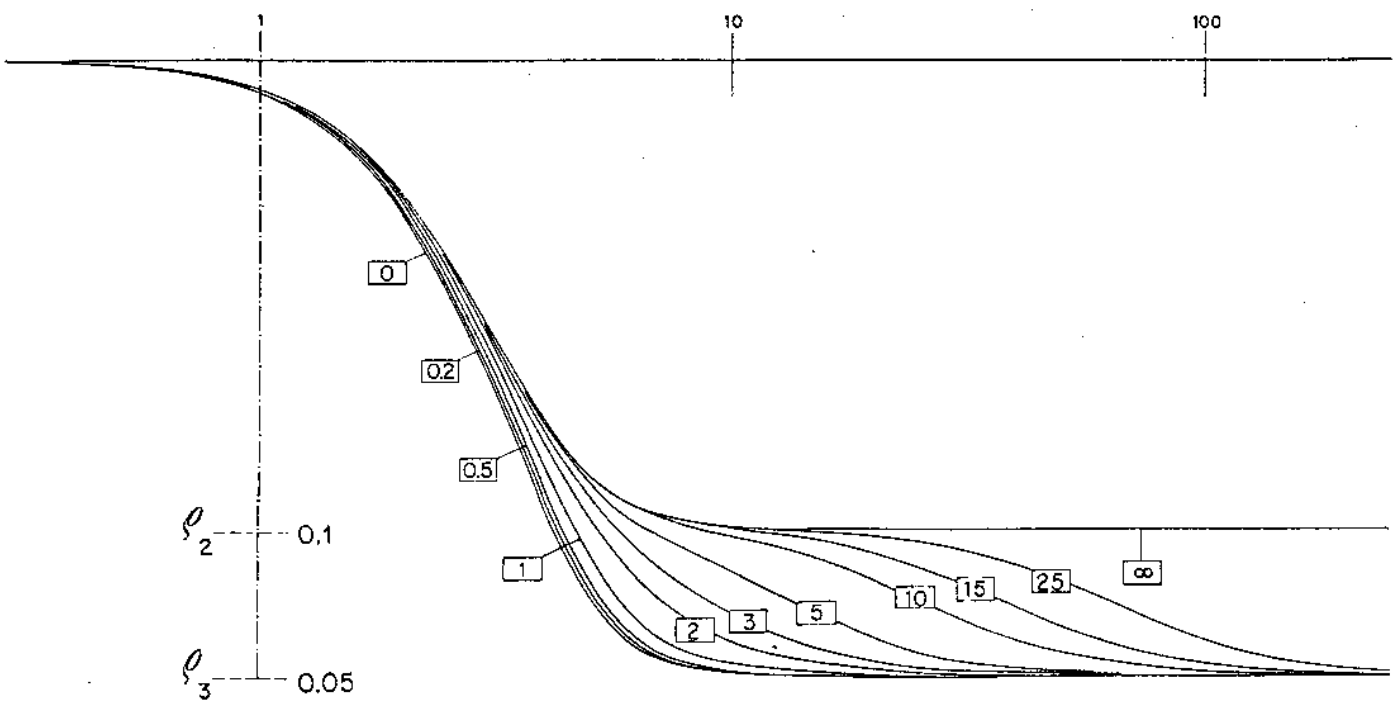
Q-9

1-0.2-0



Q-10

1-0.1-0.05

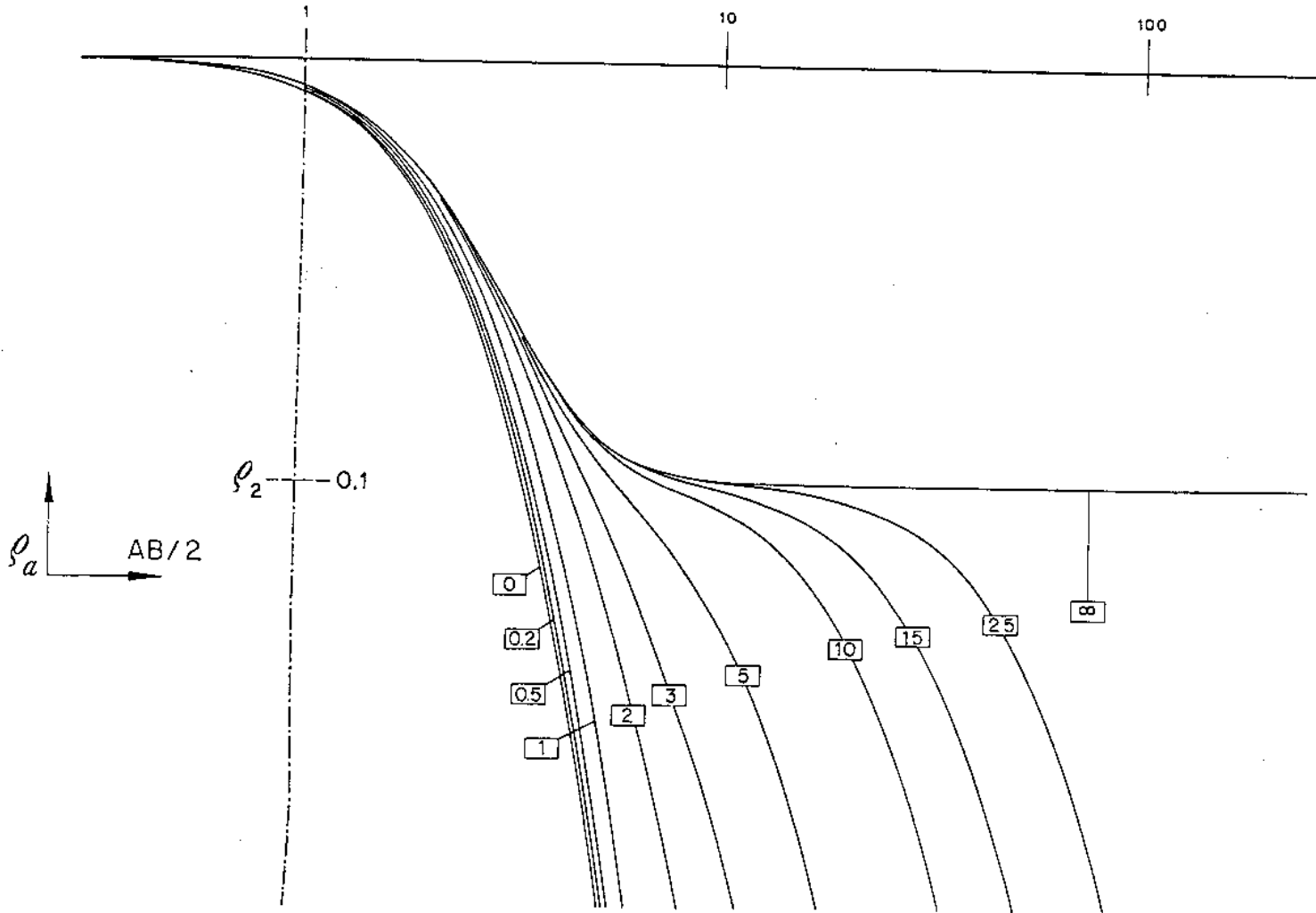


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$E_1 = 1; \rho_1 = 1; E_2 = \square$

Q-11

1-0.1-0

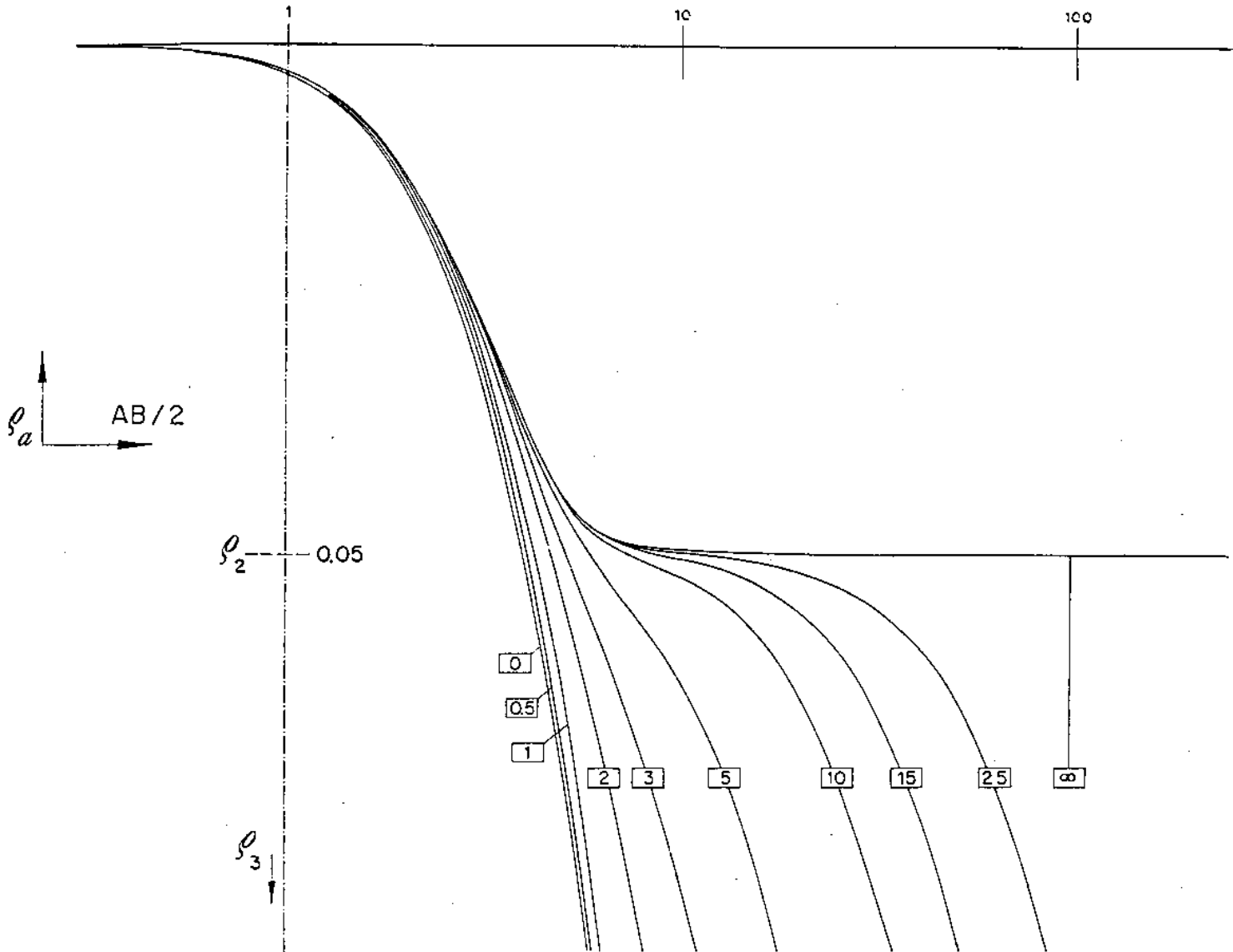


$$E_1 = 1: \rho_1 = 1: E_2 = \square$$

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Q-12

1-0.05-0

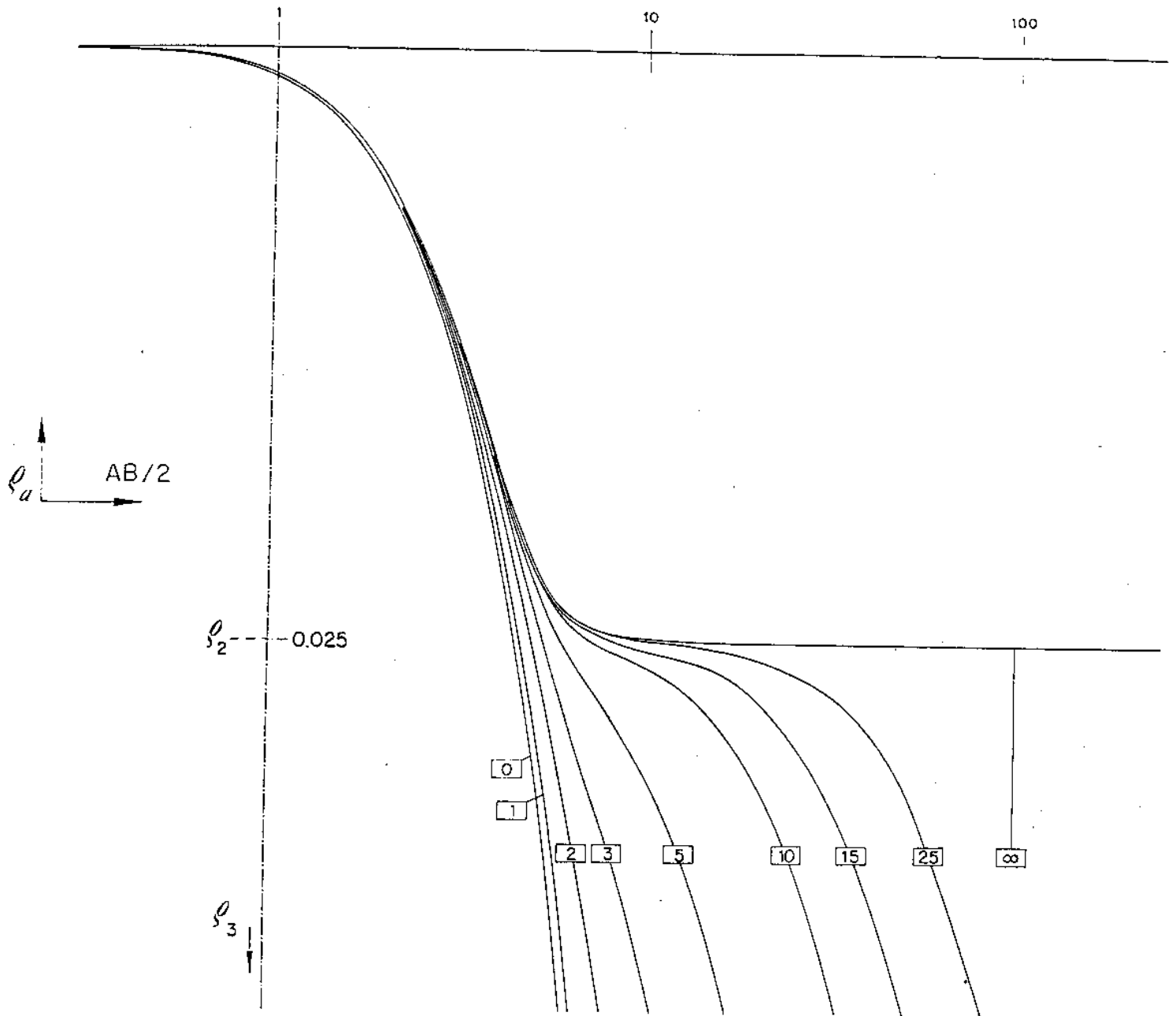


$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

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Q-13

1-0.025-0

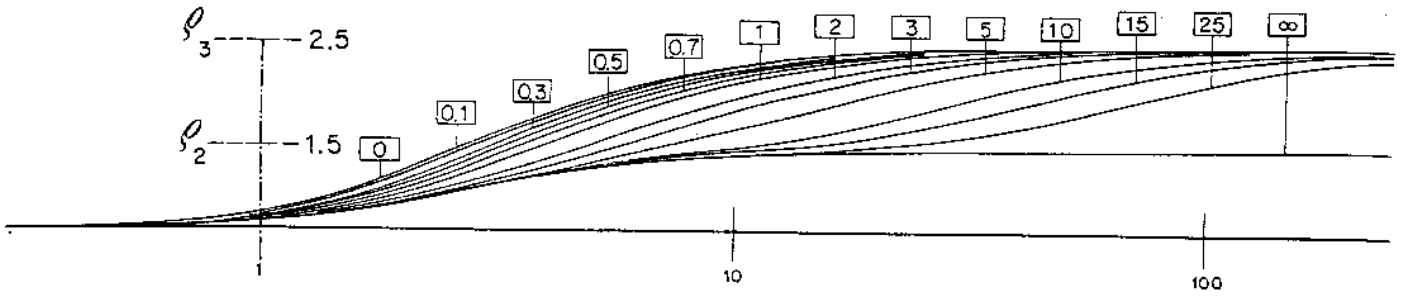


$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

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CURVAS PATRON PARA S.E.V.

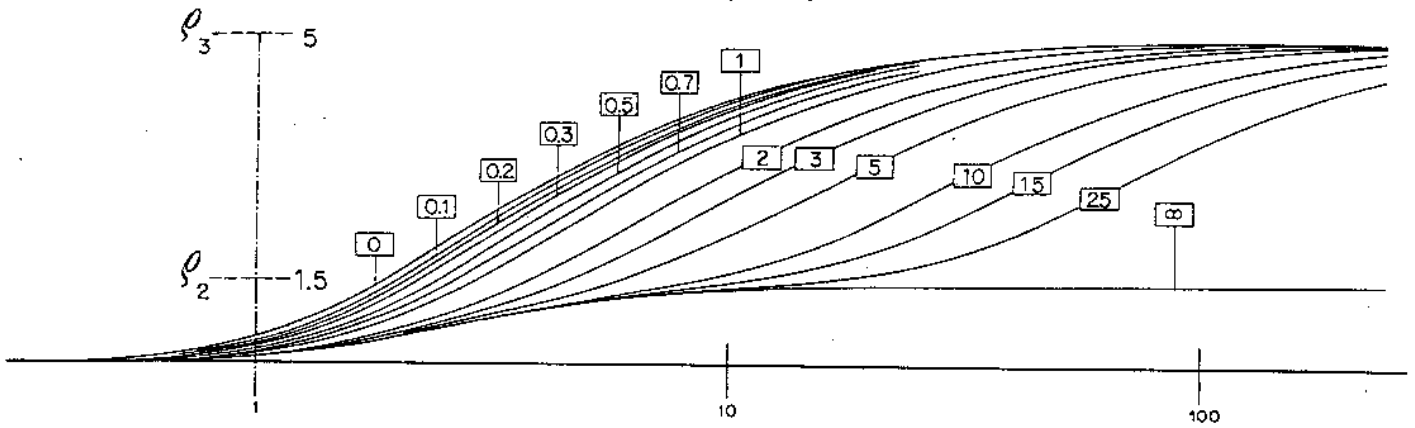
A-1

1-1.5-2.5



A-2

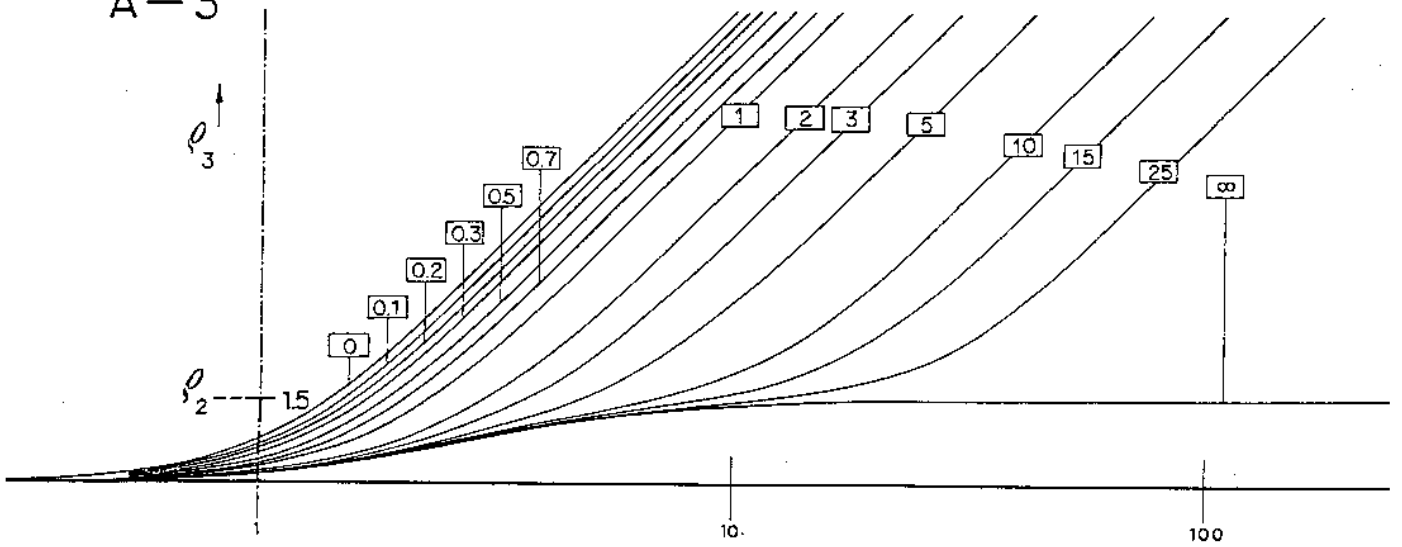
1-1.5-5



ρ_a \rightarrow AB/2

1-1.5-∞

A-3

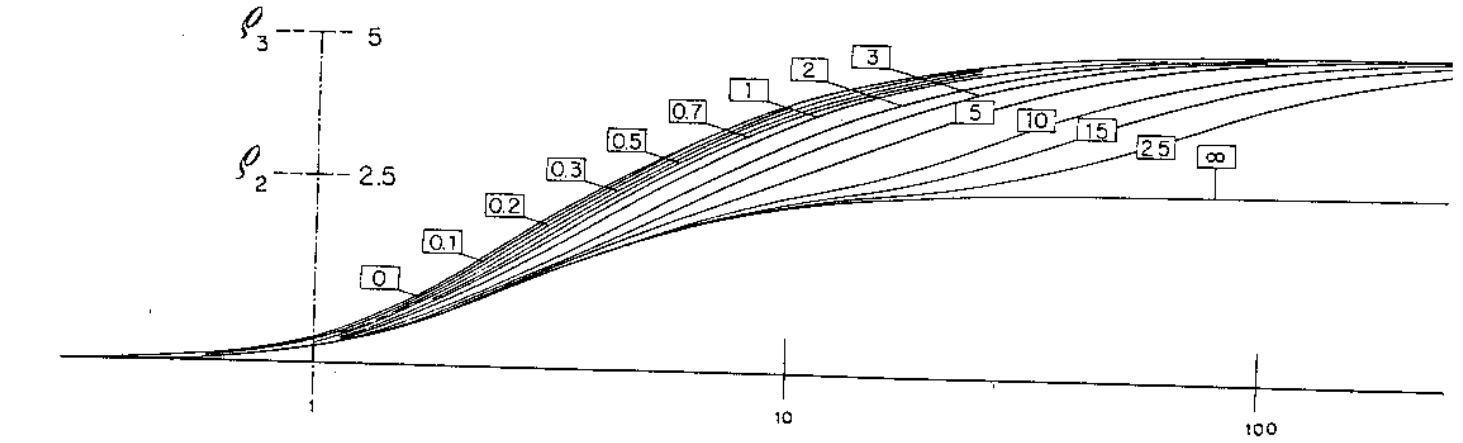


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 MASTER CURVES FOR ν=0.5.
 CURVAS PATRON PARA ν=0.5.

$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

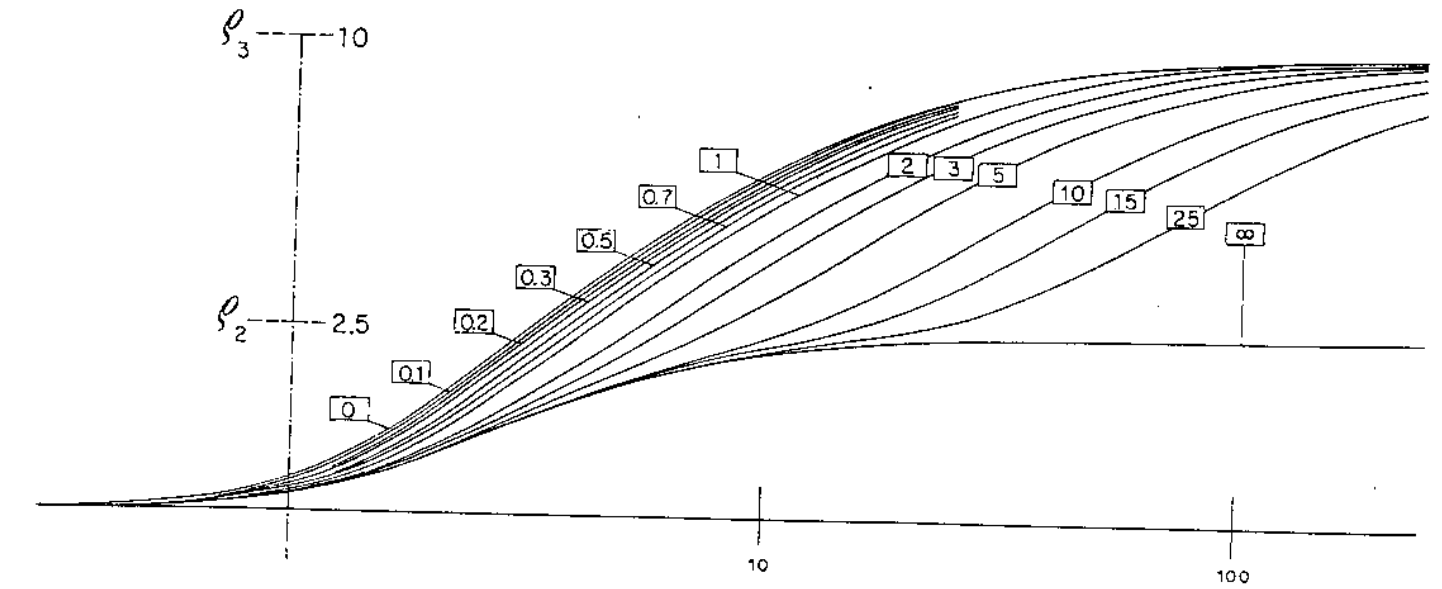
A-4

1-2.5-5



A-5

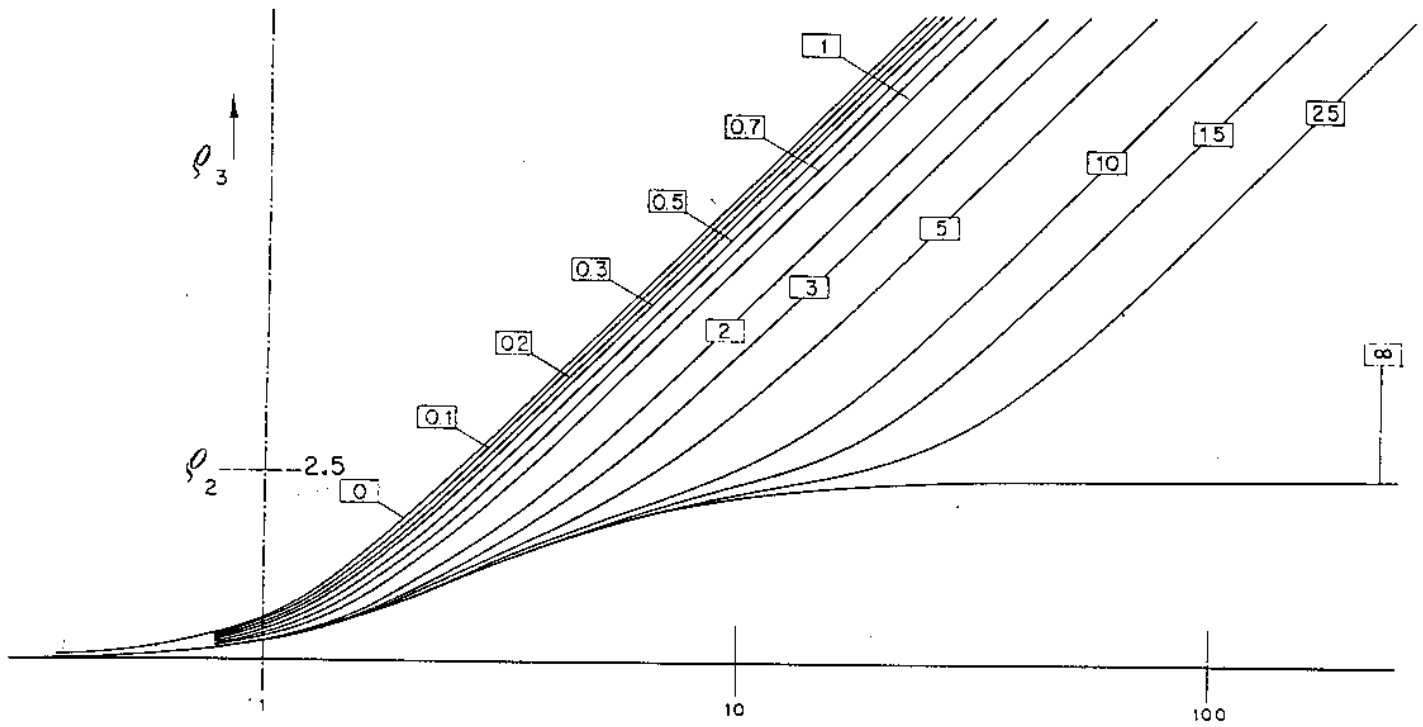
1-2.5-10



$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

A - 6

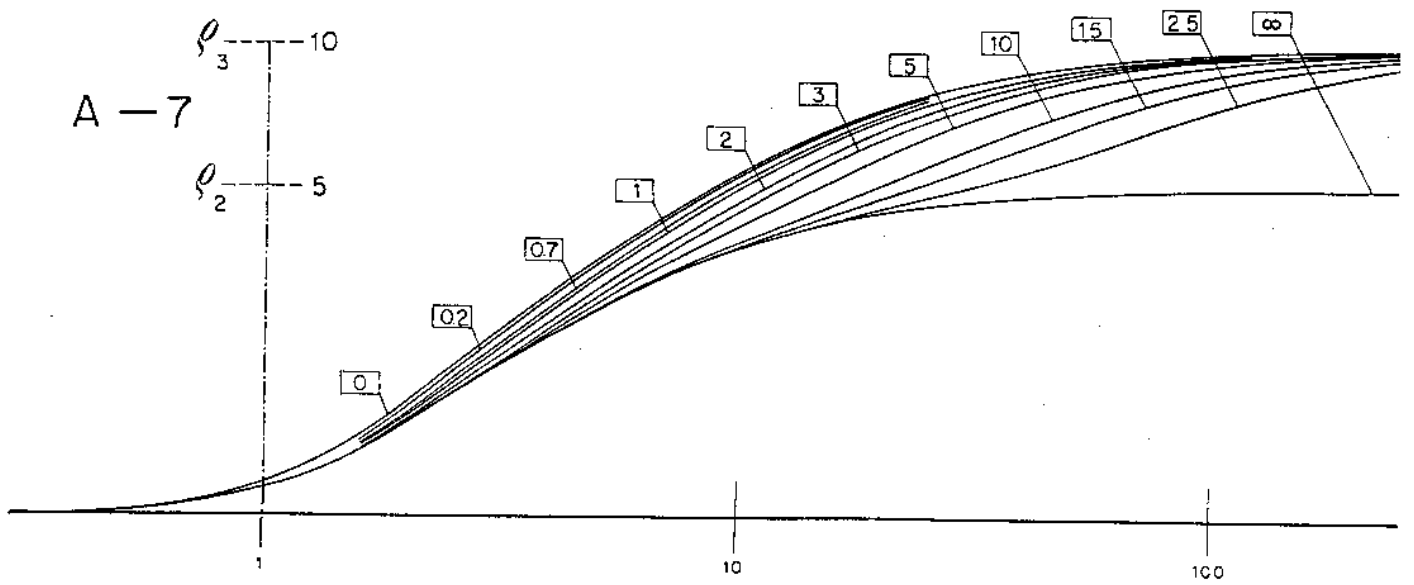
1 - 2.5 - ∞



ρ_a \rightarrow AB/2

1 - 5 - 10

A - 7

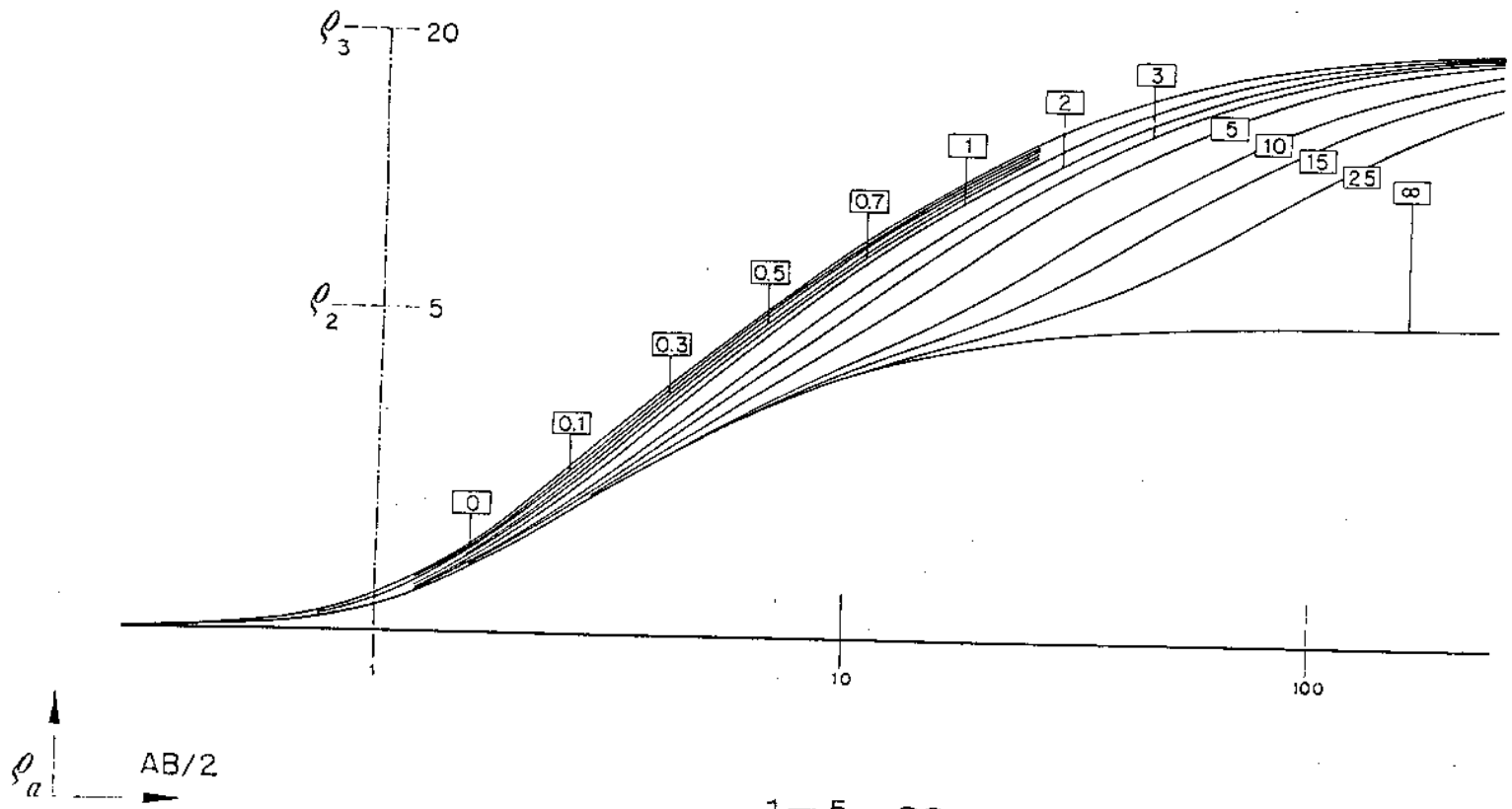


ORELLANA — MOONEY
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 CURVAS PATRON PARA SEV.

$E_1 = 1; \rho_1 = 1; E_2 = \square$

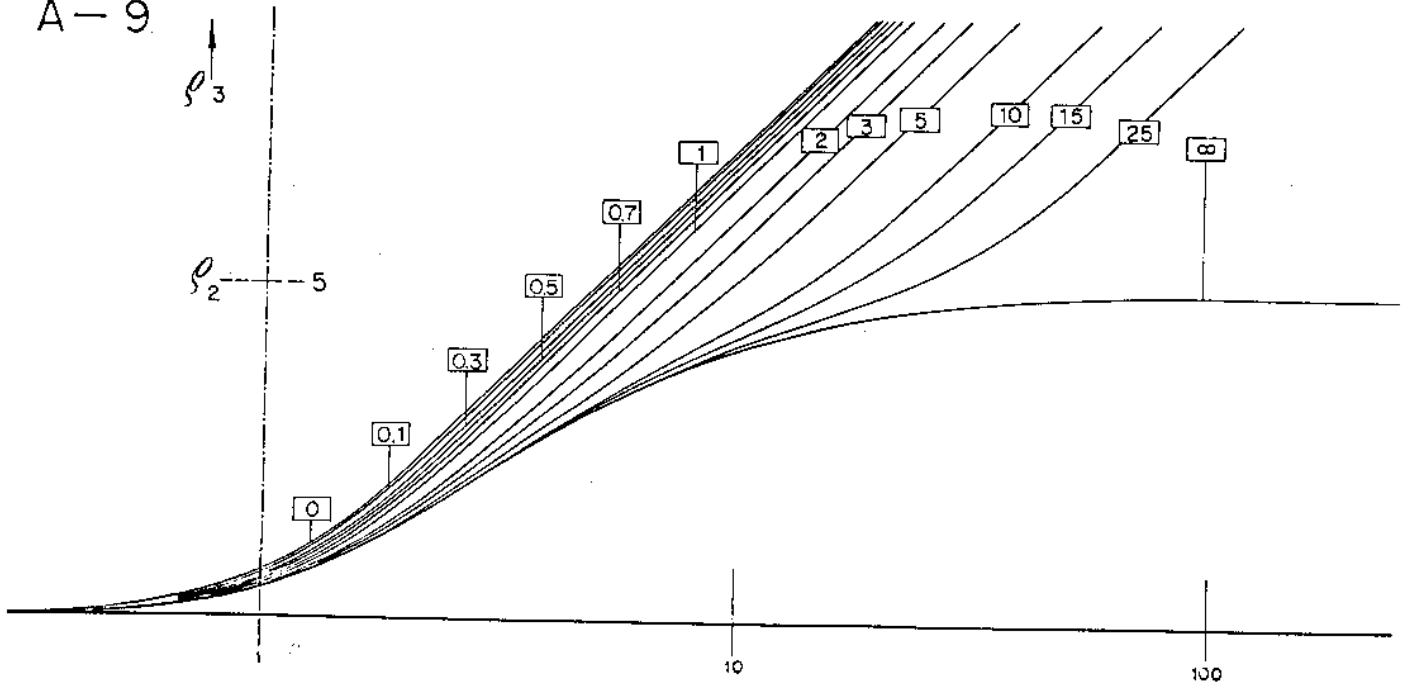
A-8

1-5-20



1-5-∞

A-9

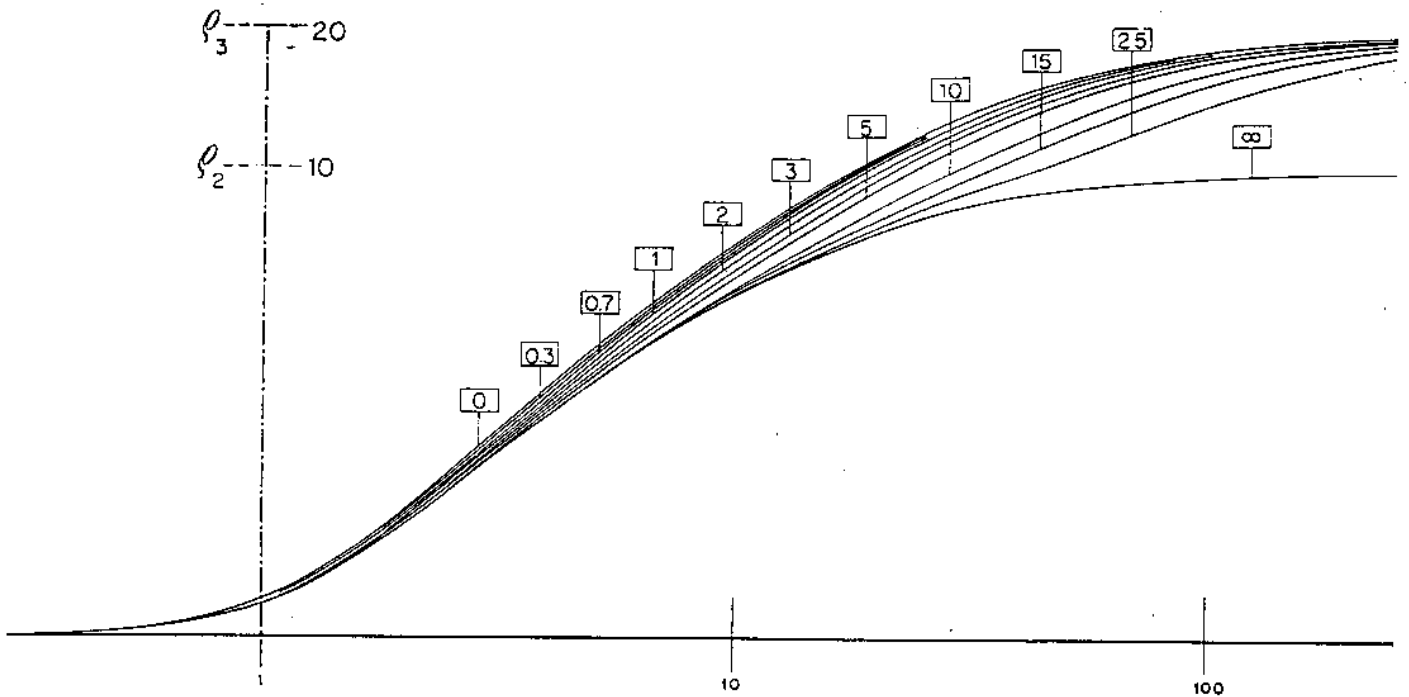


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 CURVAS PATRON PARA SEV.

$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

A-10

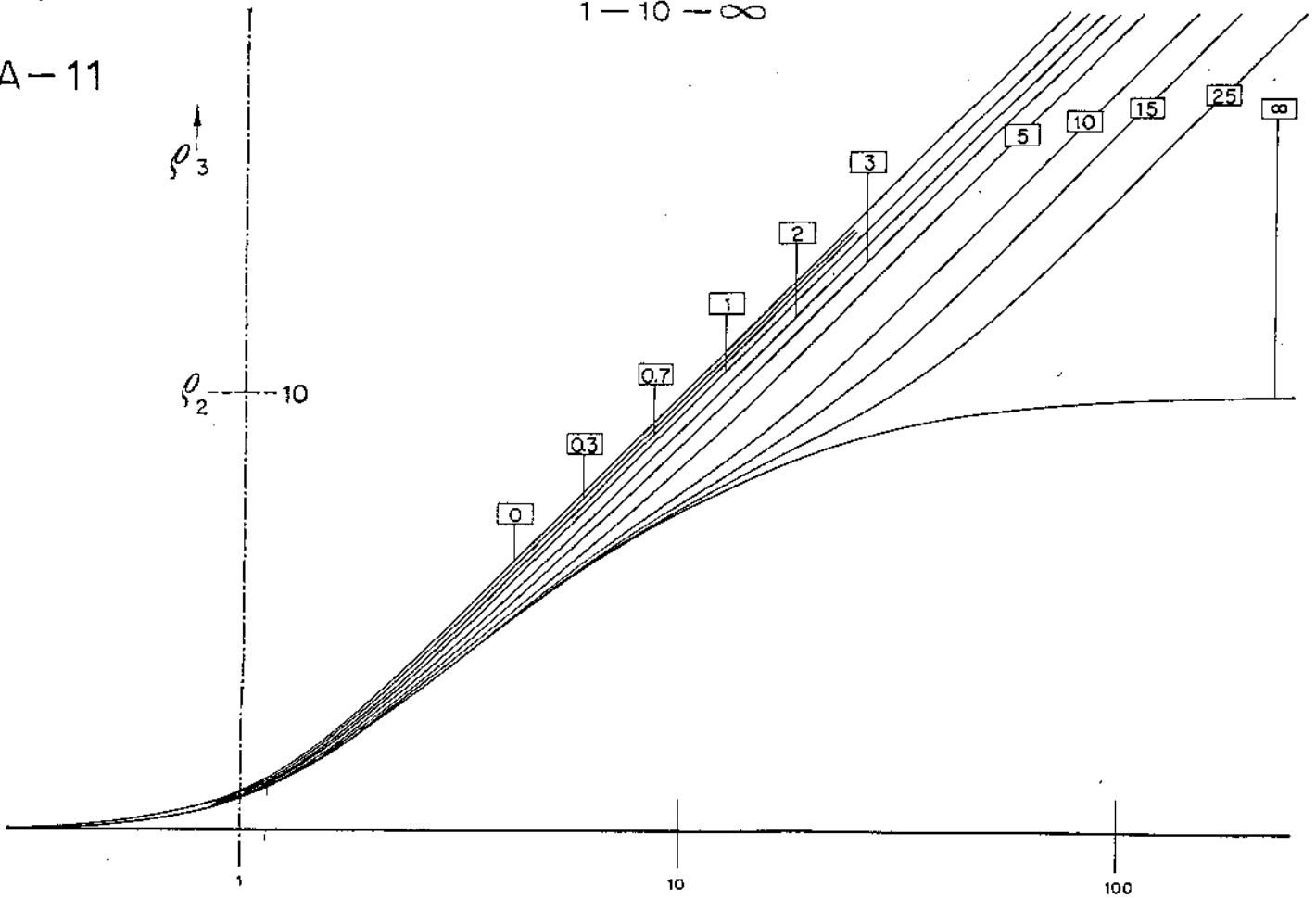
1-10-20



ρ_a \rightarrow $AB/2$

A-11

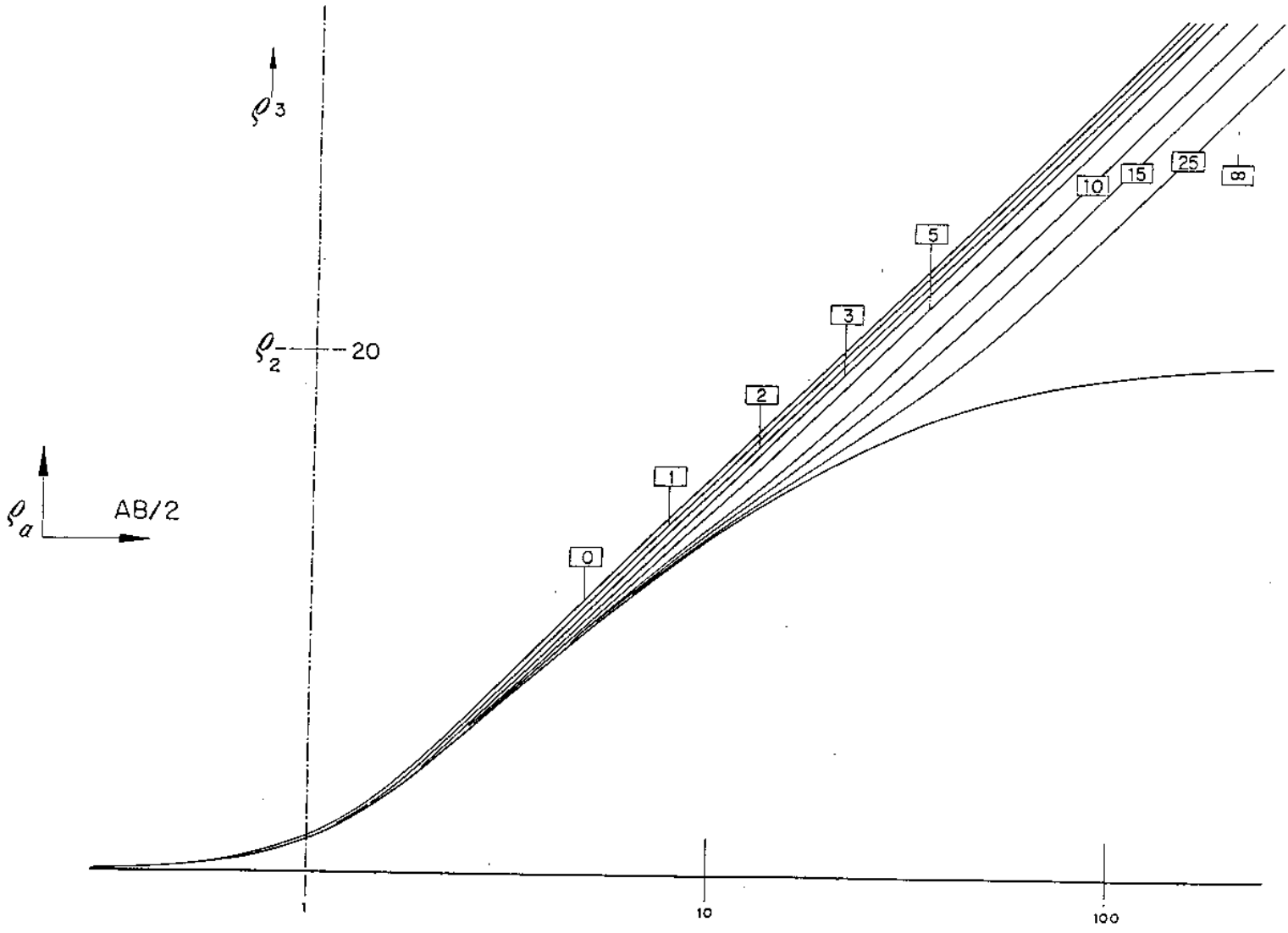
1-10- ∞



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 CURVAS PATRON PARA S.E.V.

$E_1 = 1; \rho_1 = 1; E_2 = \square$

1-20-∞

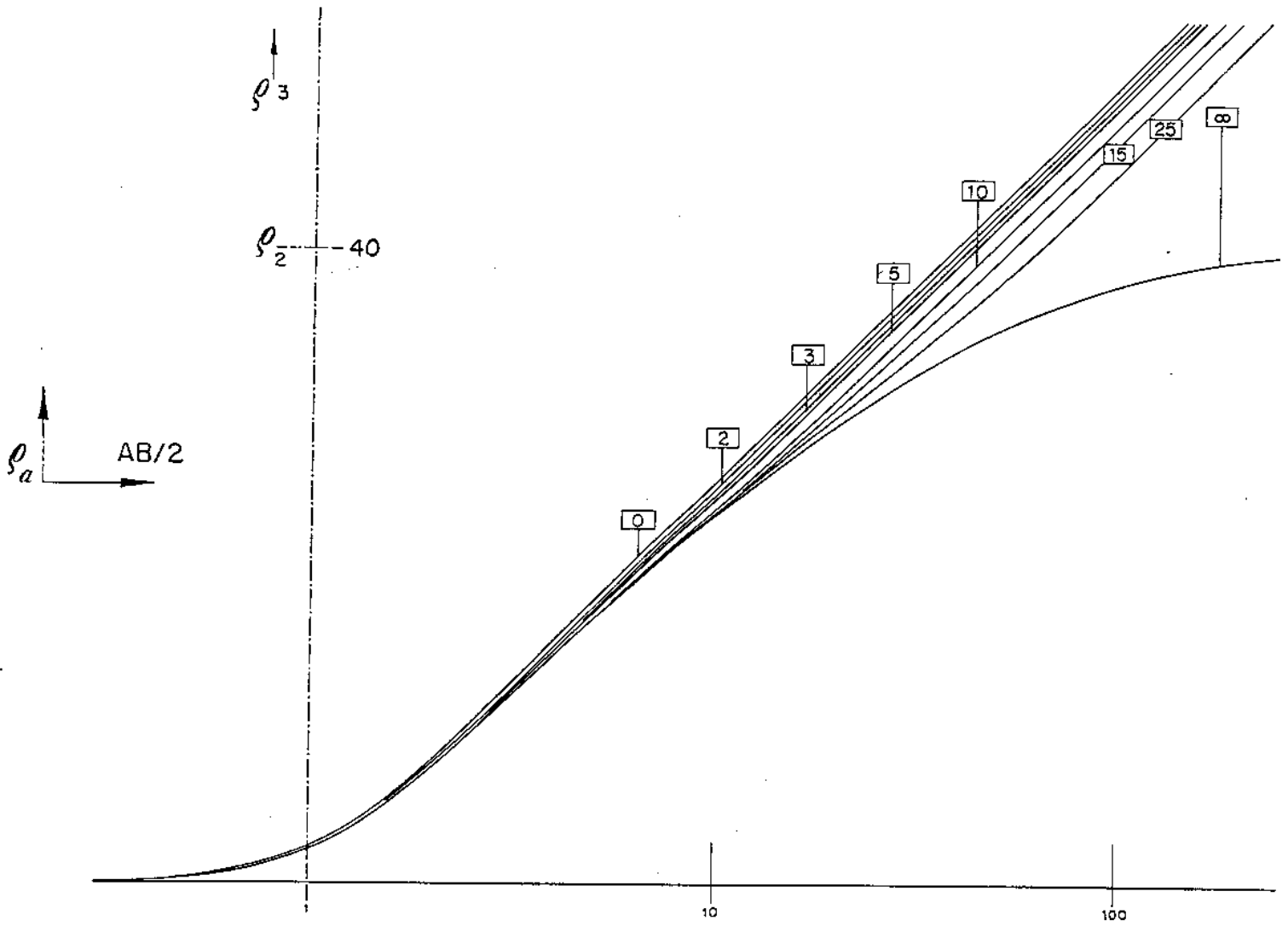


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 CURVAS PATRON PARA SEV.

$$E_1 = 1; \rho_1 = 1; E_2 = \square$$

A-13

1-40-∞



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MASTER CURVES FOR V.E.S.
CURVAS PATRON PARA S.E.V.

$$E_1 = 1; \rho_1 = 1; E_2 = \square$$