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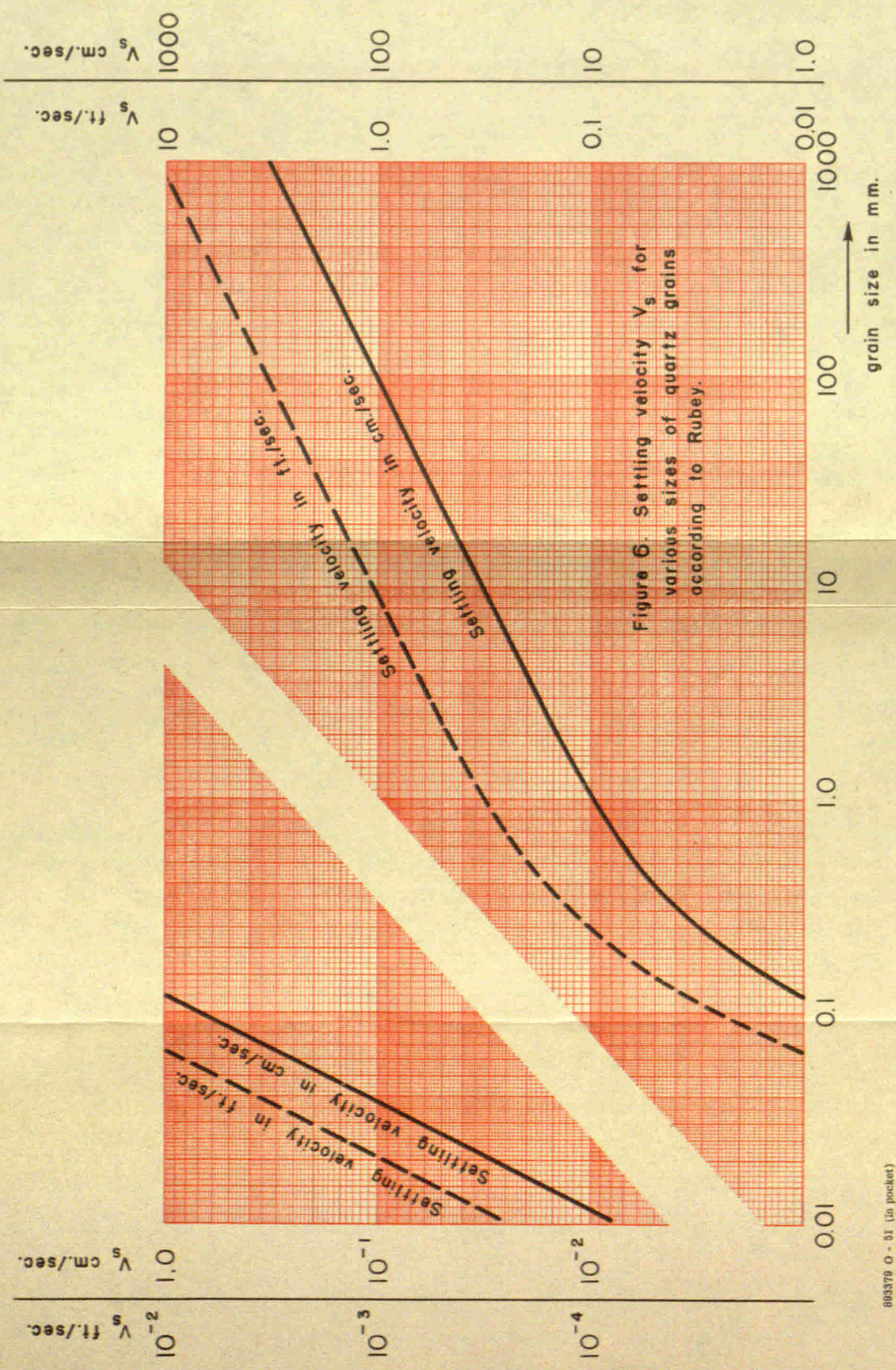


Figure 6. Settling velocity  $V_s$  for various sizes of quartz grains according to Rubey.



$k_s/\delta$

5 4 3 2 1.0 .8 .6 .5 .4 .3 .2 0.1

Y

1.0  
.9  
.8  
.7  
.6  
.5  
.4  
.3  
.2

200  
180  
160  
140  
120  
100  
80  
60  
40  
30  
20

Pressure correction in the transition to a smooth bed.

Figure 8.

Pressure reduction in sublayer

$$X = \begin{cases} 0.77\Delta \\ 1.39\delta \end{cases} \text{ for } \Delta/\delta \geq 1.80$$

Note:  
For uniform grain  
 $X = 1.39\delta$   
 $Y = 1.0$

Figure 7.

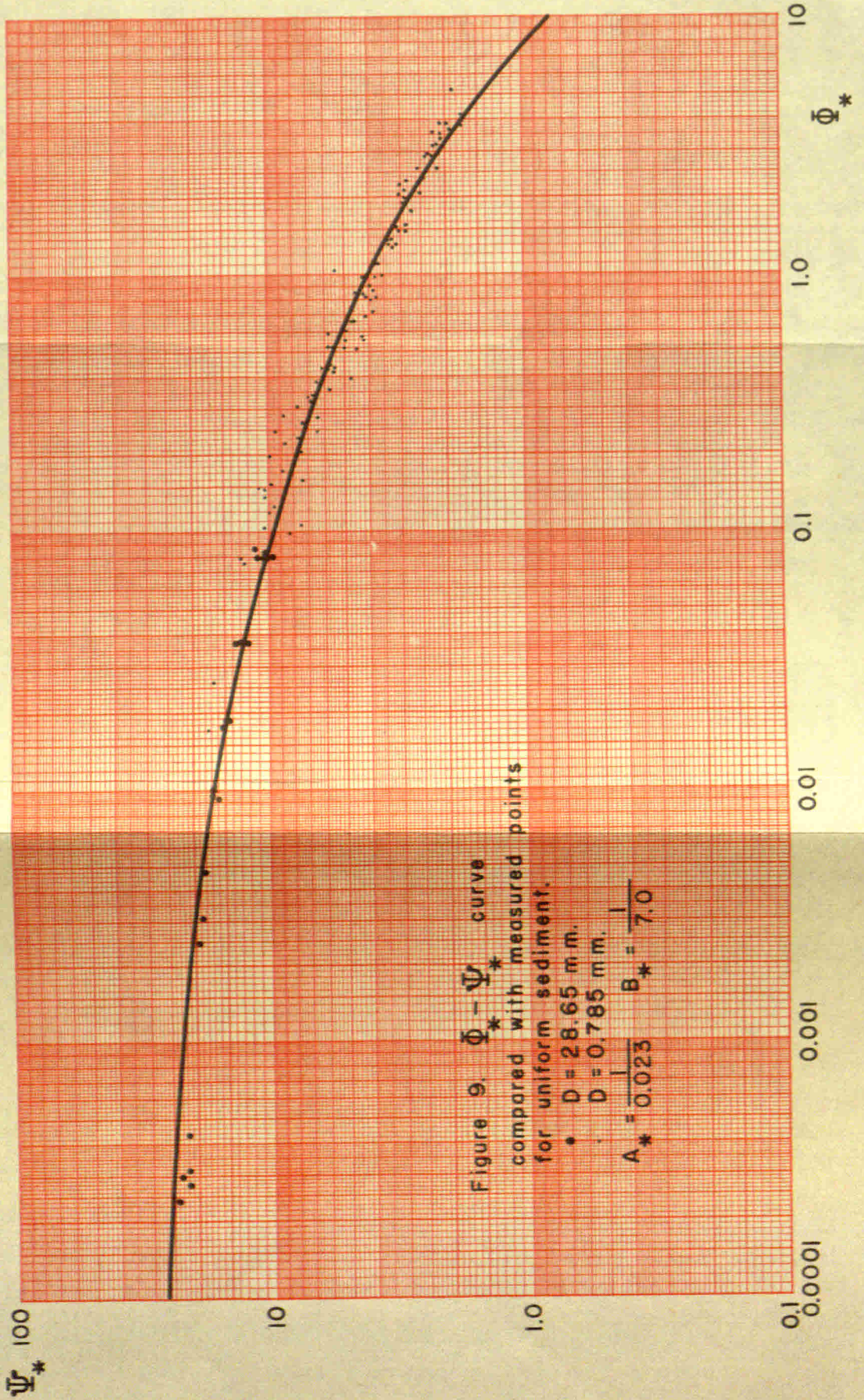
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$D/X$

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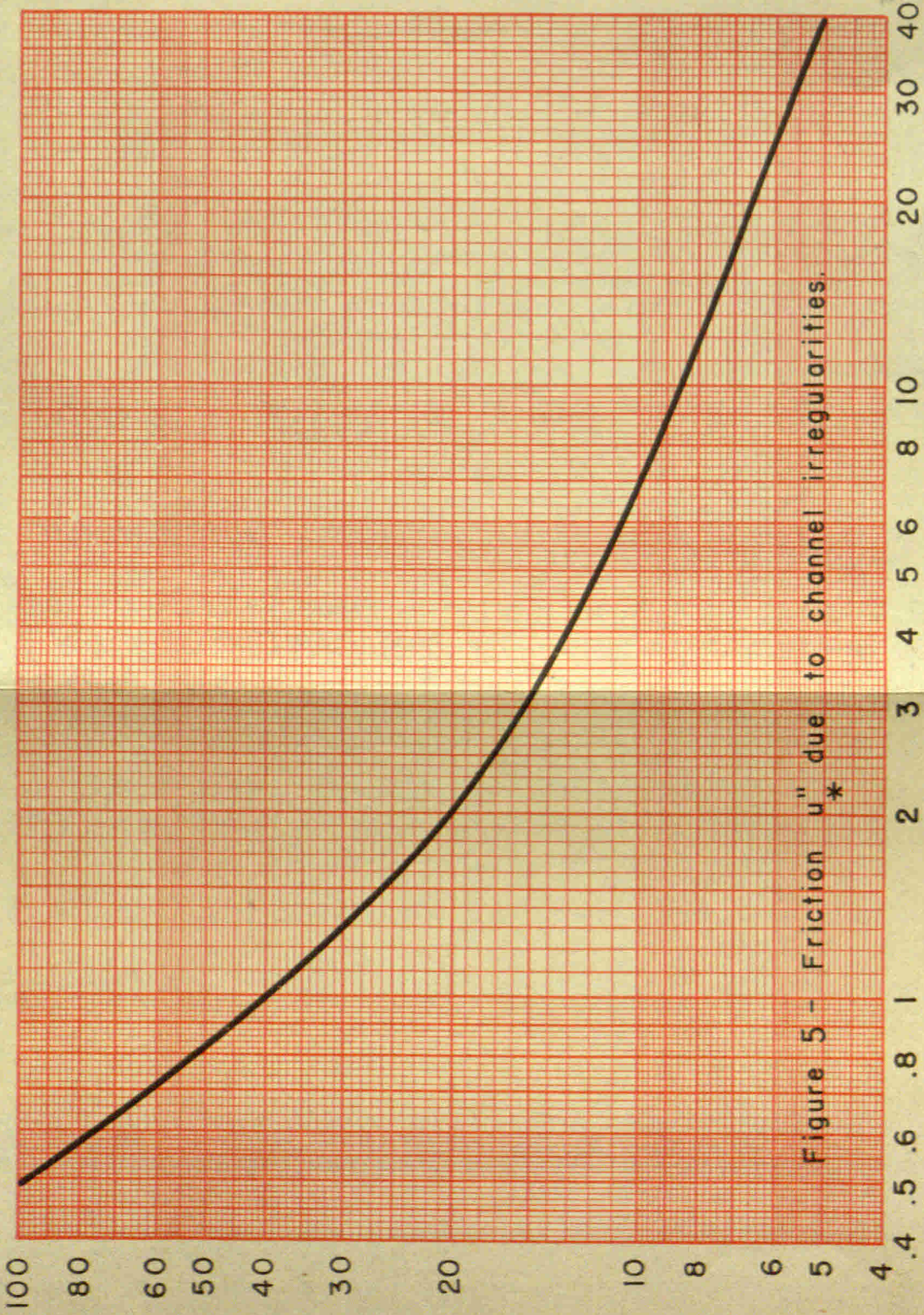


Figure 5 - Friction  $u''$  due to channel irregularities.

$$\psi' = 1.68 \frac{D^{35}}{R'S_e}$$

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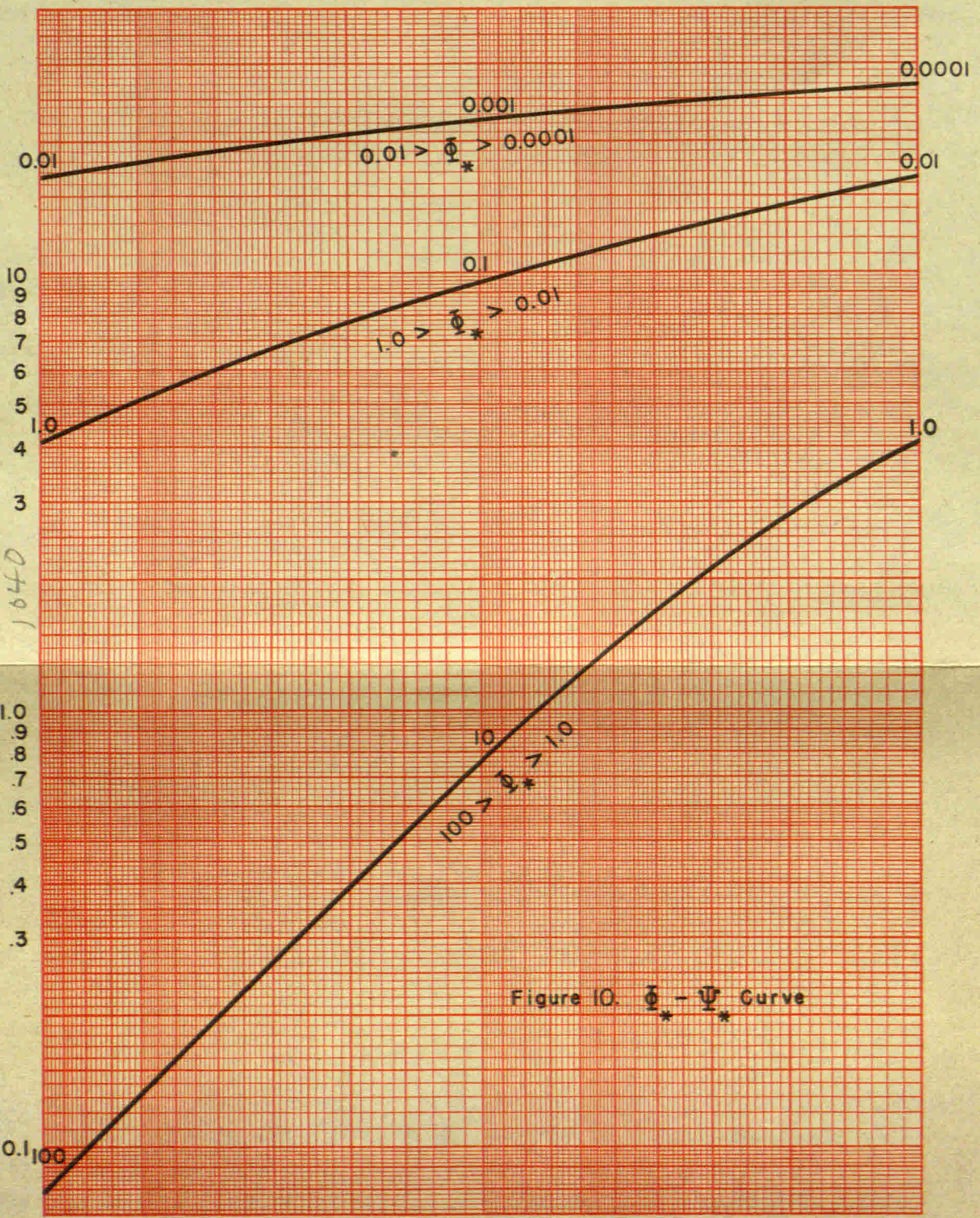


Figure 10.  $\delta_* - \psi_*$  Curve

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$\psi_*$

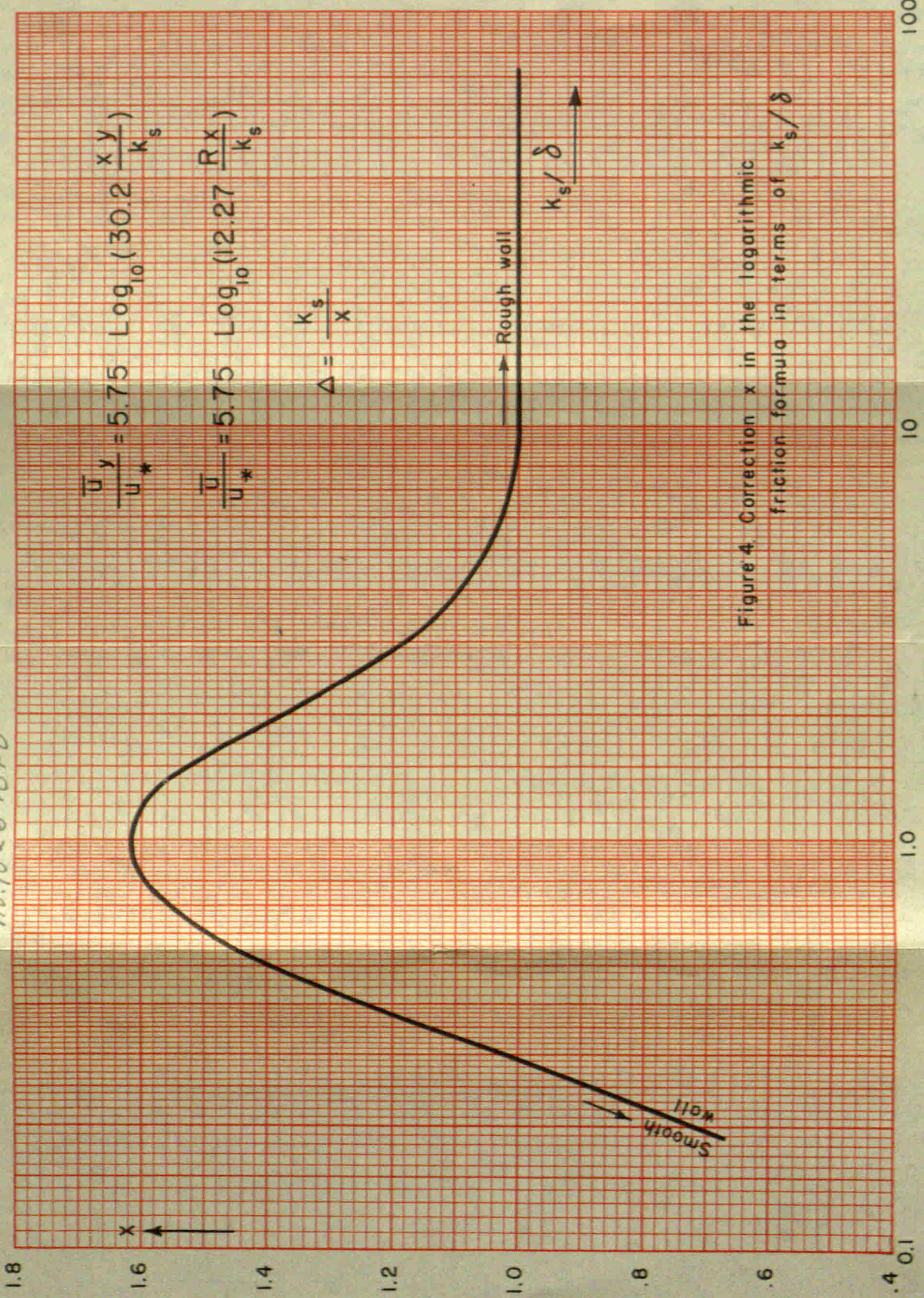
↑

10  
9  
8  
7  
6  
5  
4  
3

0.1



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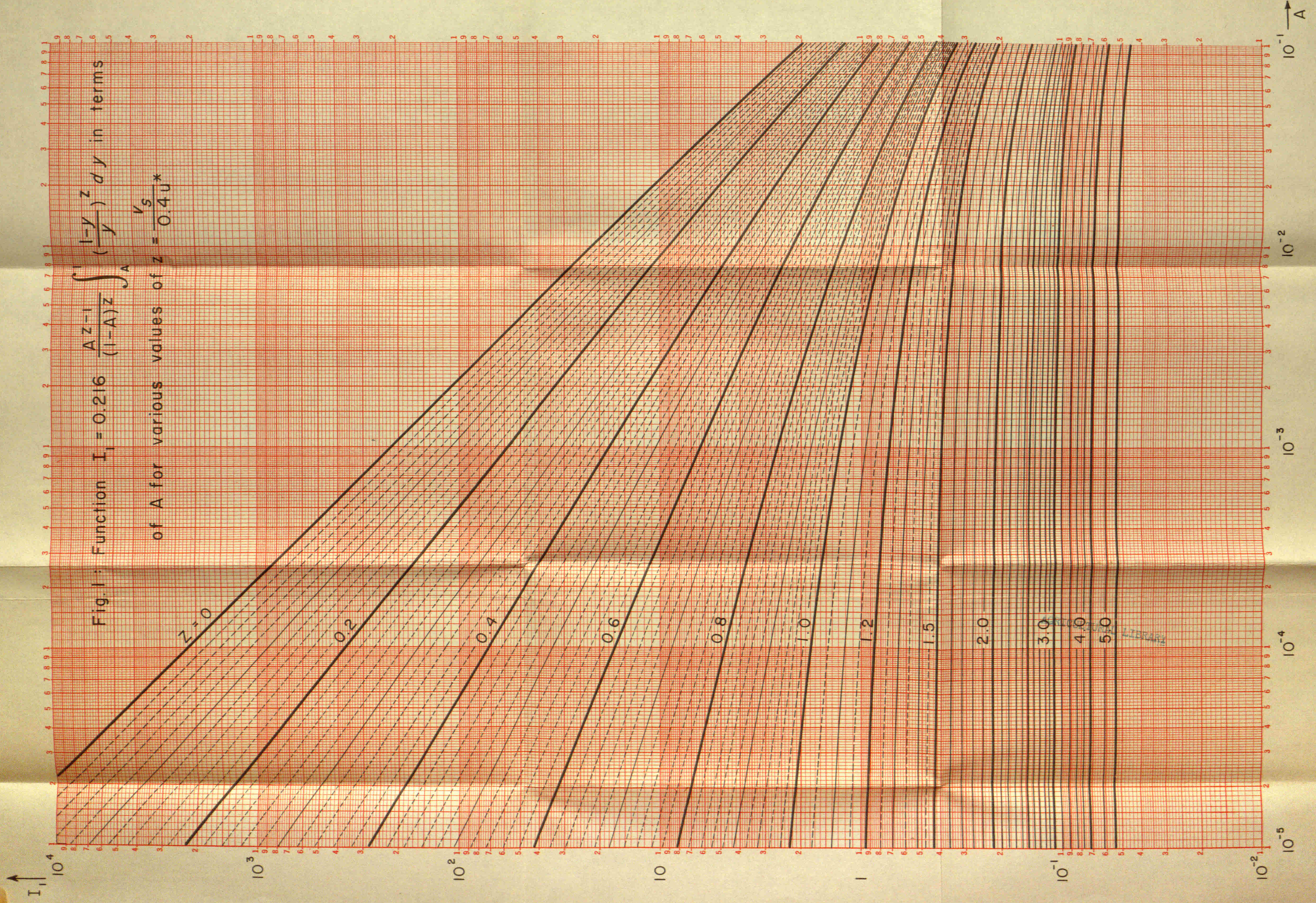
$$\frac{\bar{u}_y}{u_*} = 5.75 \log_{10} \left( 30.2 \frac{x y}{k_s} \right)$$

$$\frac{\bar{u}}{u_*} = 5.75 \log_{10} \left( 12.27 \frac{R x}{k_s} \right)$$

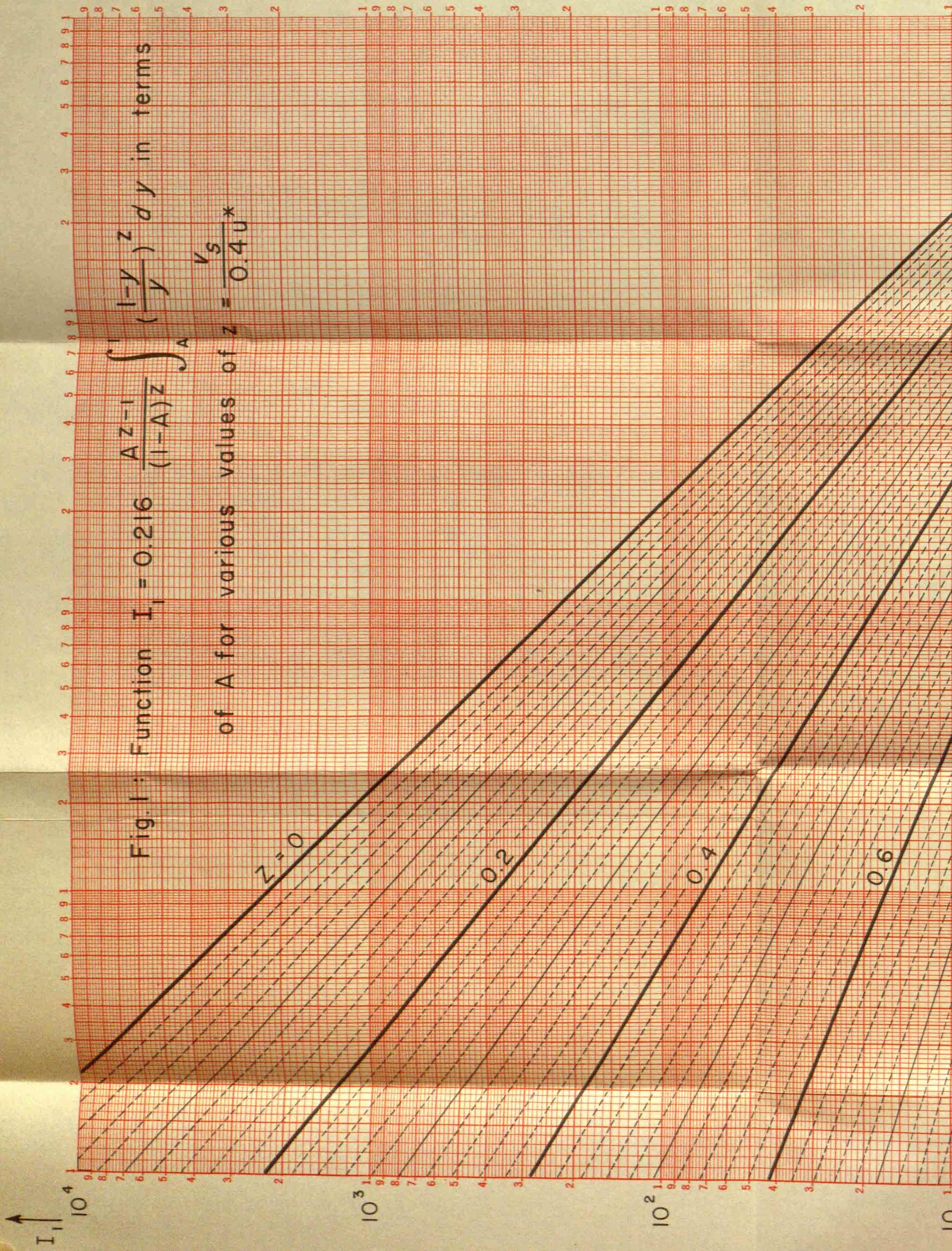
$$\Delta = \frac{k_s}{x}$$

Figure 4. Correction x in the logarithmic friction formula in terms of  $k_s/\delta$

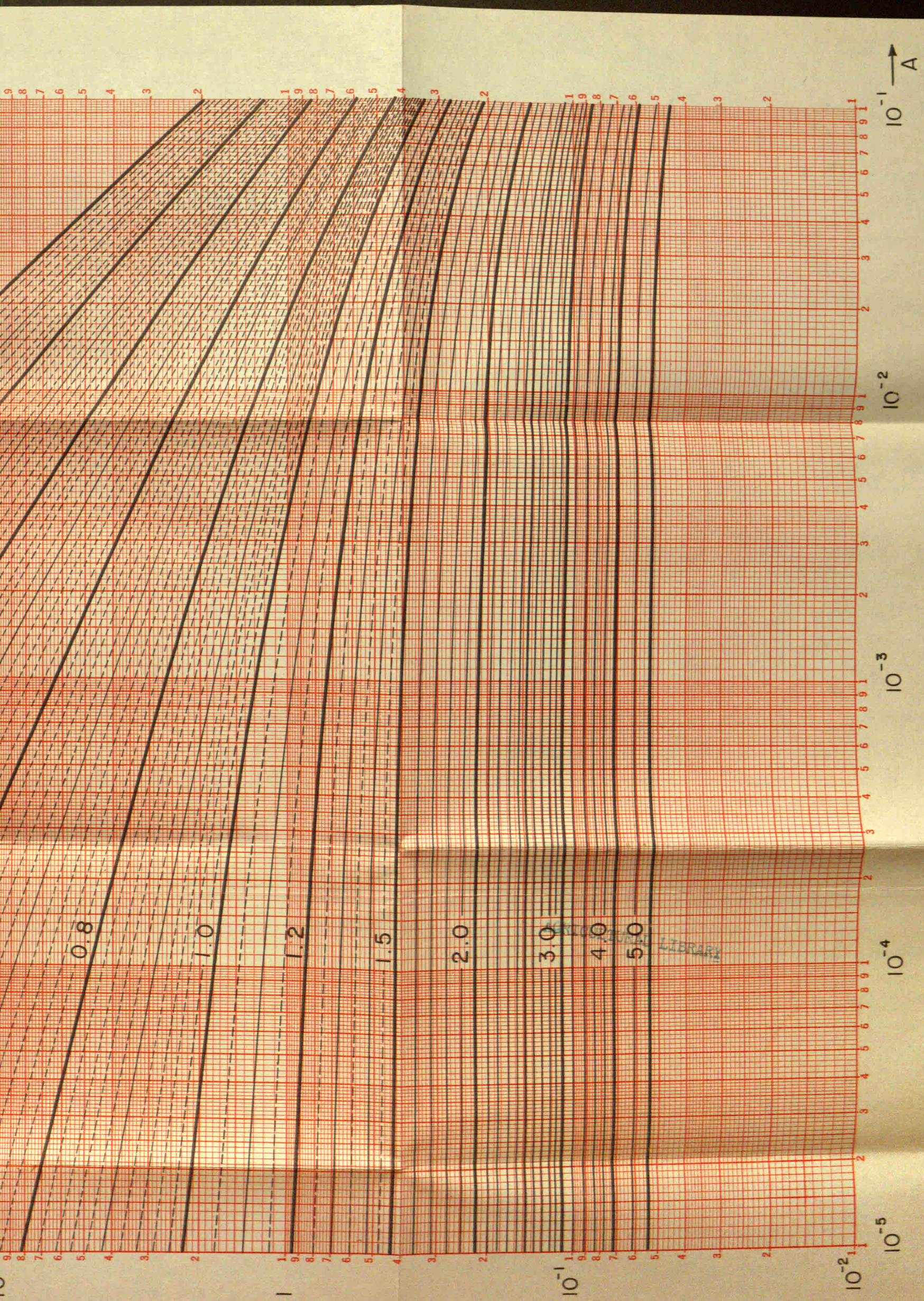














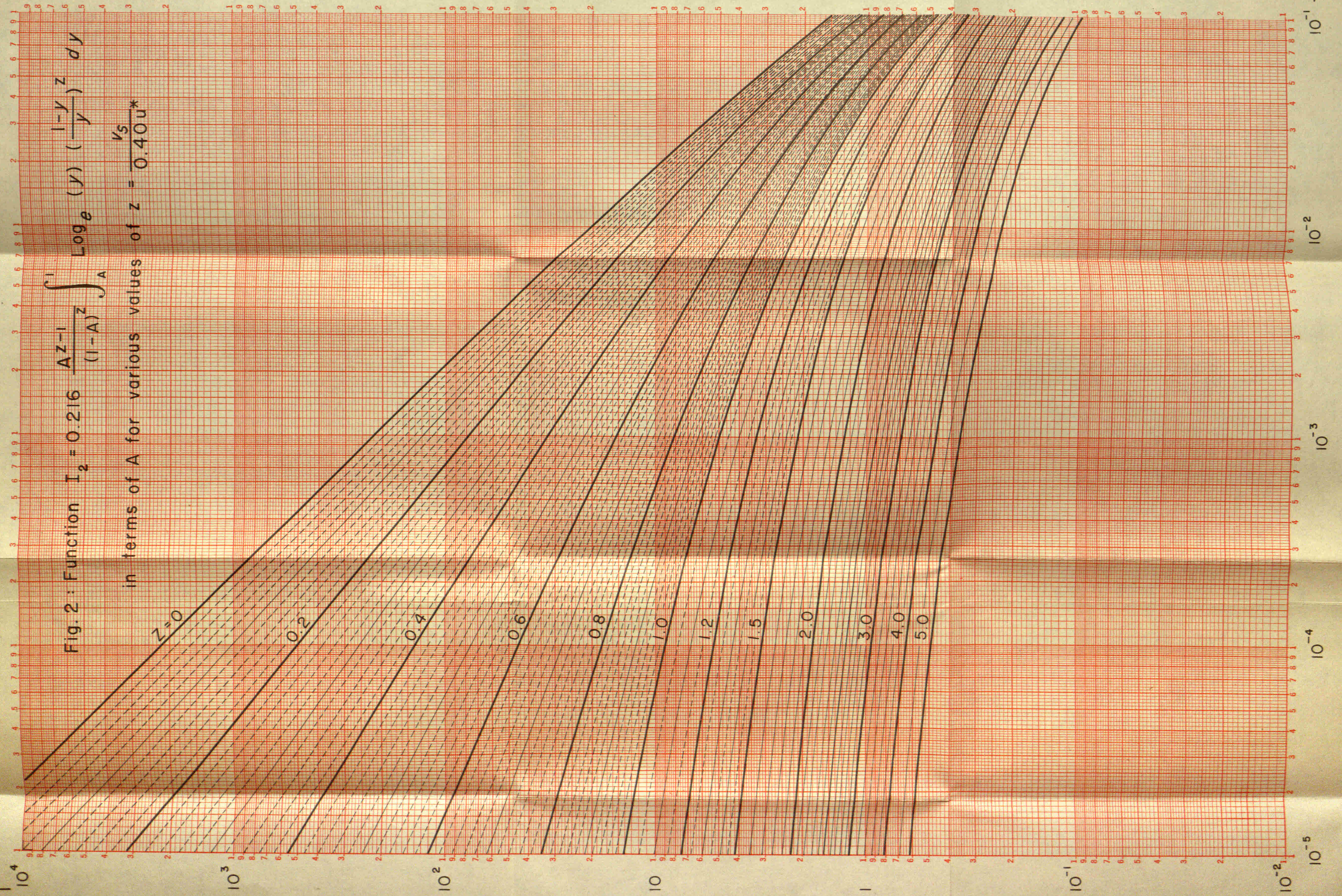


Fig. 2 : Function  $I_2 = 0.216 \frac{A z^{-1}}{(1-A)^z} \int_A^1 \text{Log}_e(y) \left(\frac{1-y}{y}\right)^z dy$   
 in terms of A for various values of  $z = \frac{V_s}{0.40u^*}$



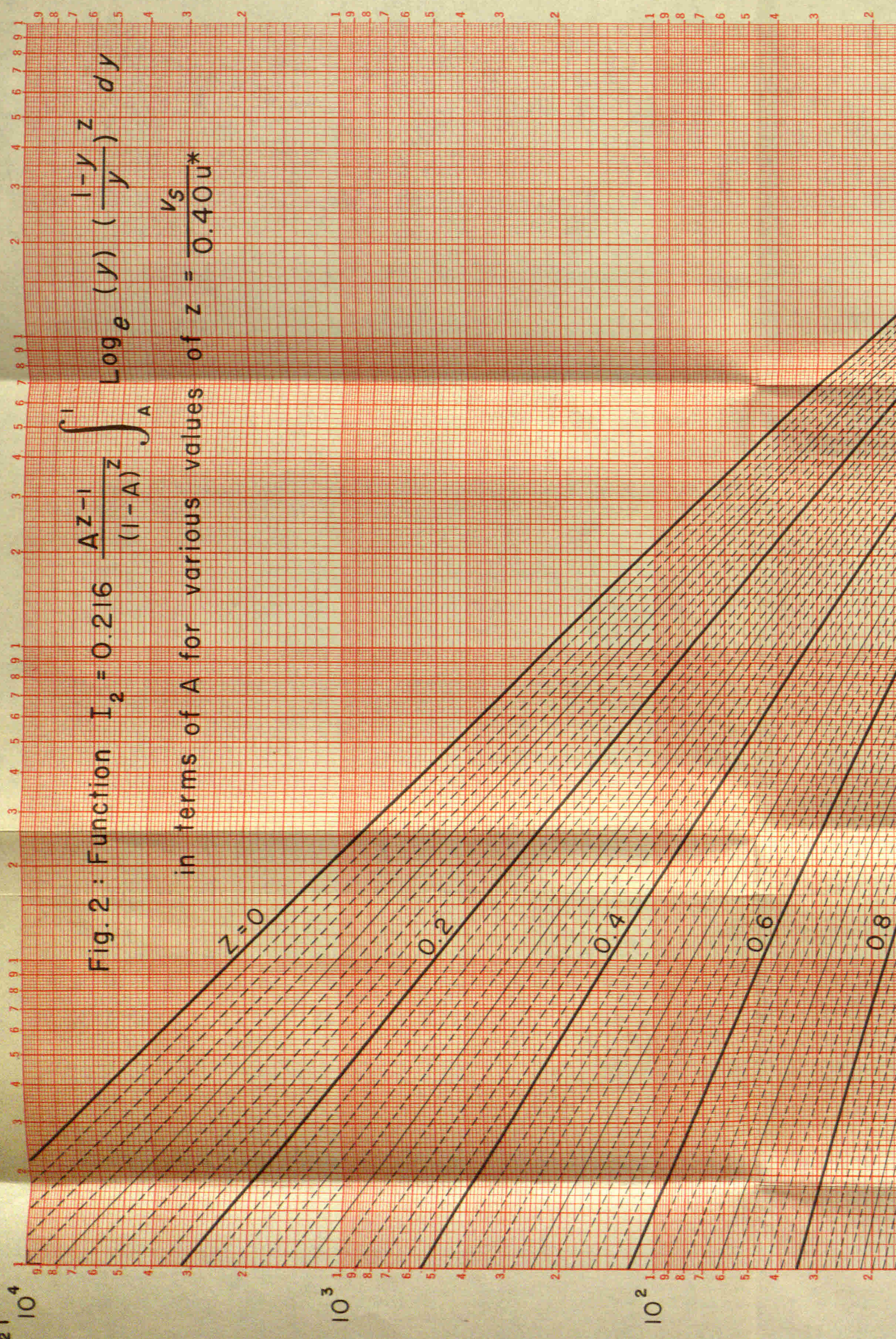


Fig. 2 : Function  $I_2 = 0.216 \frac{A^{z-1}}{(1-A)^z} \int_A^1 \text{Log}_e(y) \left(\frac{1-y}{y}\right)^z dy$   
 in terms of A for various values of  $z = \frac{v_s}{0.40u^*}$



