$R := 18295\ mm$ $\qquad t := 17.8\ mm$ $\qquad a := 406.4\ mm$

Ratio $\quad c_1 := \dfrac{R}{t} = 1.028 \cdot 10^3$ $\qquad$ Ratio $\quad c_2 := \dfrac{a}{R} = 0.022$

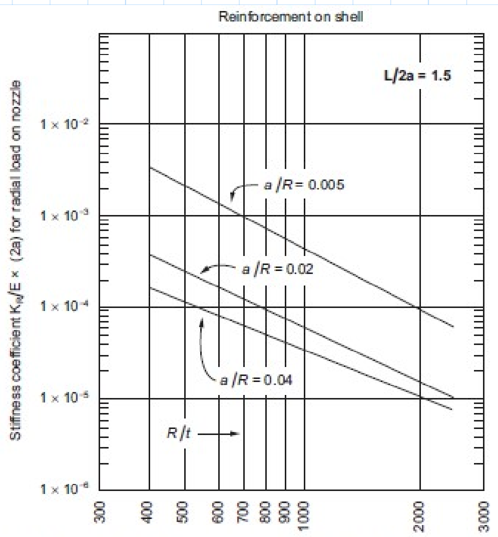


Figure P.2d—Stiffness Coefficient for Radial Load: Reinforcement on Shell ($L/2a = 1.5$)

Based on c1 ratio and c2 ratio, we will find the stiffness coefficient from the grap.

How to take the vale from the grap? please help me.

$i := \text{ORIGIN}, \text{ORIGIN}+1 .. \text{ORIGIN}+8$

$X_i := 300 \cdot i$ $\qquad Y_i := 10^{-\frac{i}{2}}$

Modulus of elasticit (as per Table P1) $E := 198508\ MPa$

stiffiness coefficient for Radial Load - reinforcing on shell as per fig P-2a. $S_{Rs} = ?$ From graph

$$K_R := S_{Rs} \cdot E \cdot 2\ a = ?\ \frac{N}{mm}$$

R_t	S_{Rs}
407.819751	0.0001523318404
2502.106643	0.000006930082326
413.3167132	0.0003544124077
2518.480684	0.000009570496175
414.8804916	0.003155702911
2526.165758	0.00005585713629

$$\begin{bmatrix} R\_t_0 \\ R\_t_1 \end{bmatrix} = \begin{bmatrix} 407.82 \\ 2.502 \cdot 10^3 \end{bmatrix}$$

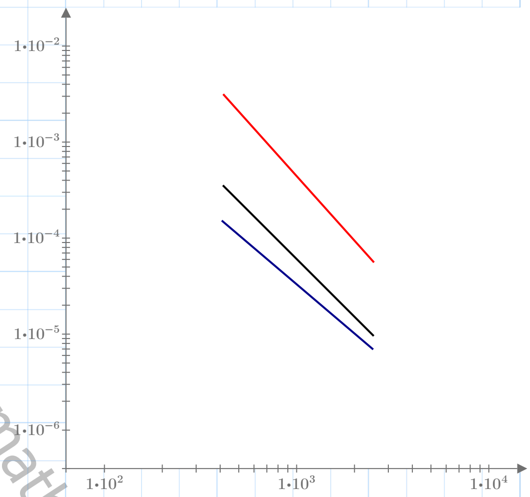


Figure P.2d–

$$Ltrp(X, Y, x) := Y_0 + (Y_1 - Y_0) \cdot \left(\frac{x - X_0}{X_1 - X_0} \right)$$

$$\text{linterp}\left(\begin{bmatrix} \log(R\_t_0) \\ \log(R\_t_1) \end{bmatrix}, \begin{bmatrix} \log(S_{Rs_0}) \\ \log(S_{Rs_1}) \end{bmatrix}, \log(rt) \right)$$

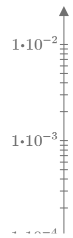
$$S_{04}(rt) := 10$$

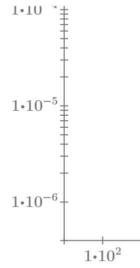
$$S_r(rt) := \begin{bmatrix} 10^{Ltrp\left(\begin{bmatrix} \log(R\_t_0) \\ \log(R\_t_1) \end{bmatrix}, \begin{bmatrix} \log(S_{Rs_0}) \\ \log(S_{Rs_1}) \end{bmatrix}, \log(rt) \right)} \\ 10^{Ltrp\left(\begin{bmatrix} \log(R\_t_2) \\ \log(R\_t_3) \end{bmatrix}, \begin{bmatrix} \log(S_{Rs_2}) \\ \log(S_{Rs_3}) \end{bmatrix}, \log(rt) \right)} \\ 10^{Ltrp\left(\begin{bmatrix} \log(R\_t_4) \\ \log(R\_t_5) \end{bmatrix}, \begin{bmatrix} \log(S_{Rs_4}) \\ \log(S_{Rs_5}) \end{bmatrix}, \log(rt) \right)} \end{bmatrix}$$

$$Ltrp\left(\begin{bmatrix} 0 \\ 4 \end{bmatrix}, \begin{bmatrix} 0 \\ 8 \end{bmatrix}, 2 \right) = 4$$

$$S_r(10^3) = \begin{bmatrix} 3.306 \cdot 10^{-5} \\ 6.062 \cdot 10^{-5} \\ 4.424 \cdot 10^{-4} \end{bmatrix}$$

$$a\_R := \begin{bmatrix} 0.005 \\ 0.02 \\ 0.04 \end{bmatrix}$$





$im := 0..\text{rows}(a\_R) - 1$ $\quad aa_{im} := 1$ $\quad X := a\_R$ $\quad Y := S_r(c_1)$

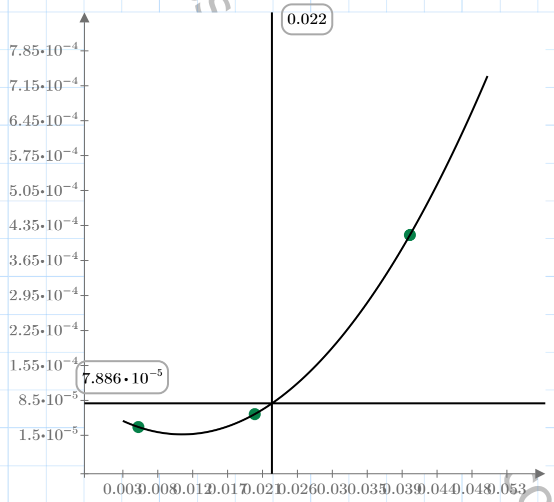
$$A := \text{augment}\left(aa, X, \overrightarrow{X^2}\right) = \begin{bmatrix} 1 & 0.005 & 2.5 \cdot 10^{-5} \\ 1 & 0.02 & 4 \cdot 10^{-4} \\ 1 & 0.04 & 0.002 \end{bmatrix}$$

$$Ap := A^T \cdot A = \begin{bmatrix} 3 & 0.065 & 0.002 \\ 0.065 & 0.002 & 7.213 \cdot 10^{-5} \\ 0.002 & 7.213 \cdot 10^{-5} & 2.721 \cdot 10^{-6} \end{bmatrix} \qquad Ab := A^T \cdot Y = \begin{bmatrix} 5.051 \cdot 10^{-4} \\ 1.795 \cdot 10^{-5} \\ 6.896 \cdot 10^{-7} \end{bmatrix}$$

$$cc := Ap^{-1} \cdot Ab = \begin{bmatrix} 6.926 \cdot 10^{-5} \\ -0.01 \\ 0.463 \end{bmatrix} \qquad A \cdot A^T = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1.001 \\ 1 & 1.001 & 1.002 \end{bmatrix}$$

$$fn(x) := cc_0 + cc_1 \cdot x + cc_2 \cdot x^2$$

$$arr := 0.003, 0.0035..0.05$$



stiffiness coefficient for Radial Load - reinforcing on shell as per fig P-2a.

$S_{Rss} := fn(c_2) = 7.886 \cdot$ From graph

$$K_R := S_{Rss} \cdot E \cdot 2\ a = 12723.256\ \frac{N}{mm}$$