include("Genfit Algo Include.sm") = 4 <- filename with .sm extension

include() function will return the number of added definitions (just a number).
The definitions will added in the background, no need to redefine them using include().

include("string") - include sm-file

$$XY := \begin{bmatrix} 0 & 1.787 \\ 5 & 1.519 \\ 10 & 1.307 \\ 20 & 1.002 \\ 30 & 0.798 \\ 40 & 0.653 \\ 50 & 0.547 \\ 60 & 0.467 \\ 70 & 0.404 \\ 80 & 0.355 \\ 90 & 0.315 \\ 100 & 0.282 \end{bmatrix}$$

$$f(x, \beta) := \beta_1 + \beta_2 \cdot \exp\left(-\frac{(x - \beta_3)}{\beta_4}\right)$$

Model function

"in φ(x,β,f,n) -> set 'n' to last index = " β

$$\varphi(x, \beta) := \varphi(x, \beta, f, 4)$$

<= Gradient Vector Function

X := col(XY, 1)

Y := col(XY, 2)

$$\begin{bmatrix} 0.26 \\ 1.75 \\ -4 \\ 29 \end{bmatrix}$$

$$\beta := \begin{bmatrix} 0.26 \\ 1.75 \\ -4 \\ 29 \end{bmatrix}$$

<= ..... initial β .....
.... iterate manually .....
<= <= re-inject the last 'β'

length(β) = 4

Genfit coeff's of fit

β := βNlin(XY, f, φ, β)

re-inject to iterate manually

Range & populate the discrete fit

L := 0 H := 100

N := 99 U := xd(L, H, N)

```
FIT := | U := 0, 0.5 .. 100
       | for i ∈ 1 .. rows(U)
       |   FIT_i := eval(f(U_i, β))
       | augment(U, FIT)
```

$$\beta = \begin{bmatrix} 0.255 \\ 1.737 \\ -4.141 \\ 29.345 \end{bmatrix}$$

Collect initial & successive 'β'

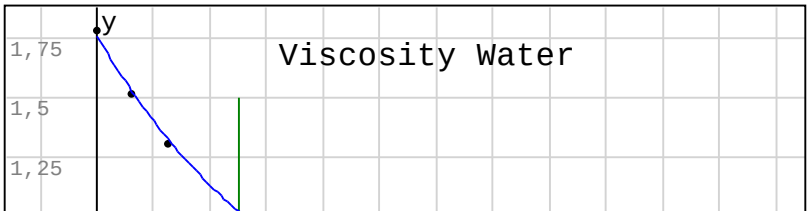
$$\beta = \left[\begin{bmatrix} 0.26 \\ 1.75 \\ -4 \\ 29 \end{bmatrix} \begin{bmatrix} 0.255 \\ 1.742 \\ -4.18 \\ 29.372 \end{bmatrix} \ldots\right]$$

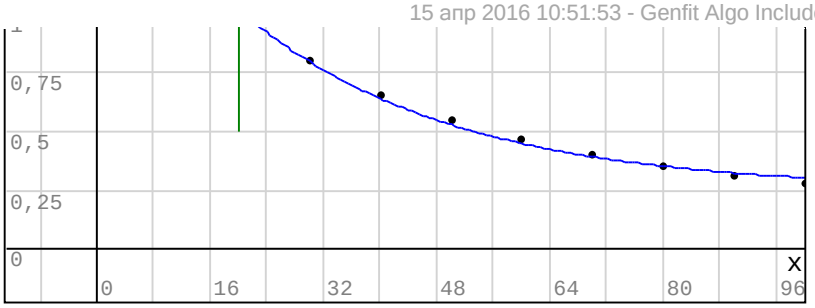
data := plotG(X, Y, ".", 12, "black")

Title := [25 1.75 "Viscosity Water" 12 "black"]

$$cp20 := \begin{bmatrix} 20 & 1.5 \\ 20 & 0.5 \end{bmatrix}$$

$$collect := \begin{cases} FIT \\ Title \\ cp20 \\ 1.002 \\ data \end{cases}$$





collect