

$$km(x, \beta) := \beta_1 + \frac{\beta_8}{x + \beta_2 - \frac{\beta_9}{x + \beta_3 - \frac{\beta_{10}}{x + \beta_4 - \frac{\beta_{11}}{x + \beta_5 - \frac{\beta_{12}}{x + \beta_6 - \frac{\beta_{13}}{x + \beta_7}}}}}$$

$$\beta := \begin{bmatrix} -16702.7193446 \\ 124.751615769 \\ -208.000512345 \\ -16.7911347830 \\ -4.9542542218810^{-2} \\ -8.76777990888 \\ -1.33046986462 \\ 4191546.15004 \\ 4221.26725909 \\ 5327.77204957 \\ 1.34644054551 \\ 4.17574113874 \\ 0.274345957759 \end{bmatrix}$$

```
plot(data, char, size, clr) := for k ∈ 1..rows(data)
    [r3_k := char r4_k := size r5_k := clr]
    augment(data, r3, r4, r5)
```

```
data :=
    0      60000
    0.5    35462
    1      30747
    2.1    26217
    3.6    22781
    5.6    19921
    9.7    16453
    14.7   13766
    22.3   11115
    32.4   8654
    50.2   5563
    75.5   2423
    101.325 0
```

```
data := plot(data, "o", 5, "black")
```

```
{ XY := data 1..13 1..2
  [ X := col(XY, 1) Y := col(XY, 2)]
```

Absolute residuals

```
Δ := Δ := 0
for j ∈ 1..rows(XY)
    Δ_j := eval(Y_j - km(X_j, β))
res := augment(X, Y, round(Δ, 12))
stack(["kPa" "alt[m]" "Δm"], res)
```

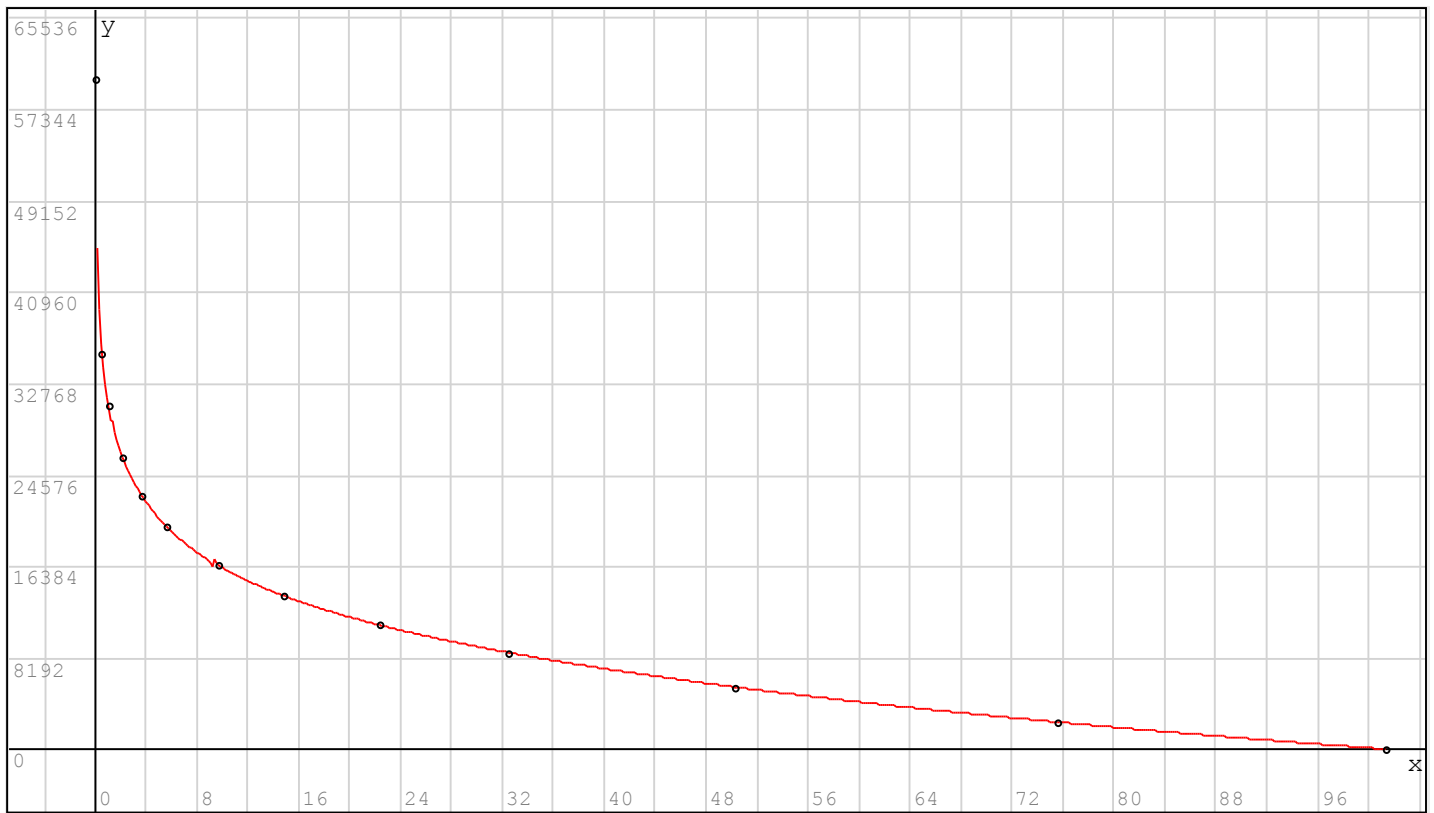
$$k(x) := \begin{cases} 1 & \text{if } (0 \leq x) \wedge (x \leq 101.325) \\ "" & \text{otherwise} \end{cases}$$

```
Δm := col(Δ, 3)
```

```
Δ =
    "kPa" "alt[m]" "Δm"
    0      60000    0
    0.5    35462    0
    1      30747    0
    2.1    26217    0
    3.6    22781    0
    5.6    19921    0
    9.7    16453    0
    14.7   13766    0
    22.3   11115    0
    32.4   8654     0
    50.2   5563     0
    75.5   2423     0
    101.325 0        0
```

```
Δm =
    "Δm"
    0.000000
    0.000000
    0.000000
    0.000000
    0.000000
    0.000000
    0.000000
    0.000000
    0.000000
    0.000000
    0.000000
    0.000000
    0.000000
    0.000000
```

altitude [m] vs measured pressure [kPa] ... i.e: InverseNASA(h)



```
{ data
  km(x, β) · k(x)
```

<https://www.grc.nasa.gov/WWW/K-12/airplane/atmosmet.html>

NASA atmos-airplane <https://www.grc.nasa.gov/WWW/K-12/airplane/atmosmet.html>