

Michaelis-Menten regression

restart :

with(plots) :

with(Statistics) :

X er målte data for [S], og Y er målte data for v_0 :

$X := \langle 0.0015, 0.02, 0.03, 0.05, 0.10, 0.25, 1.00, 2.00 \rangle :$

$Y := \langle 0.10, 0.13, 0.17, 0.23, 0.35, 0.46, 0.56, 0.58 \rangle :$

Tilpasning til Michaelis-Menten kurve:

$f := \text{unapply}\left(\text{Fit}\left(\frac{a \cdot x}{b + x}, X, Y, x\right), x\right) :$

$$f(x) = \frac{0.600722436249246 x}{0.0745140809599701 + x}$$

$$V_{\max} := \lim_{x \rightarrow \infty} f(x) = 0.6007224362$$

$$K_M := \text{solve}\left(f(x) = \frac{V_{\max}}{2}, x\right) = 0.07451408095$$

Graf med målepunkter:

$mmpunkter := \text{pointplot}(X, Y) :$

$vmax := \text{plot}(V_{\max}, \text{color} = \text{blue}, \text{legend} = 'V_{\max}') :$

$kmx := \text{plot}\left(\frac{V_{\max}}{2}, x = 0 .. K_M, \text{color} = \text{green}\right) :$

$kmy := \text{implicitplot}\left(x = K_M, x = 0 .. 2 \cdot K_M, y = 0 .. \frac{V_{\max}}{2}, \text{color} = \text{green}, \text{legend} = 'K_M'\right) :$

$mmgraf := \text{plot}(f(x), \text{gridlines}, \text{color} = \text{red}, \text{legend} = 'Michaelis Menten kurve') :$

$\text{display}(mmpunkter, vmax, kmx, kmy, mmgraf, \text{view} = [0 .. 2, 0 .. 0.7], \text{labels} = ["[S]", "v0"])$

