$$MomentumBalance_{Ejector} := Mmp \cdot V_1 \cdot Eff - Mhp \cdot V_2 - Mlp \cdot V_3 - Amp \cdot (Pmp - Plp)$$

```
Pmp = Motive Pressure (kPa)
Plp = Suction Pressure (kPa)
Amp = Area of Discharge Nozzle (m2)
Mmp = Discharge Mass Flowrate (kg/s)
V1 = Discharge Velocity (m/s)
Mhp = Motive Mass Flowrate (kg/s)
V2 = Motive Velocity (m/s)
Mlp = Suction Mass Flowrate (kg/s)
V3 = Suction Velocity (m/s)
Eff = Overall efficiency of Ejector (%)
```

$Mmp := Mhp + Mlp$ MassBalance

$Pmp := 11000$ $Plp := 15$ $Amp := 70 \cdot 10^{-6}$

$Eff := 0.7$

$Mlp := 0.01$

$$Density := \begin{bmatrix} D_1 \\ 5.53 \\ 8.711 \cdot 10^{-2} \end{bmatrix}$$

for $n \in [1..3]$

$V_n := \frac{MassFlow_n}{Density_n \cdot Area_n}$

$$Area := \begin{bmatrix} Amp \\ 50 \cdot 10^{-6} \\ 5.1 \cdot 10^{-4} \end{bmatrix}$$

$$MassFlow := \begin{bmatrix} Mmp \\ Mhp \\ Mlp \end{bmatrix}$$

$$V = \begin{bmatrix} \frac{1000 \cdot (1 + 100 \cdot Mhp)}{7 \cdot D_1} \\ \frac{2000000 \cdot Mhp}{553} \\ \frac{100000000}{444261} \end{bmatrix}$$

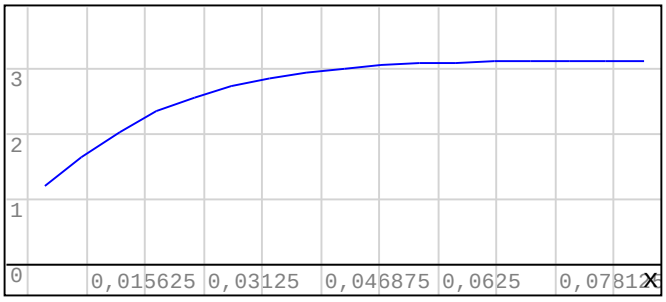
$vMhp := [0.01, 0.015..0.09]$

$$MomentumBalance_{Ejector} = \frac{20000 \cdot \left(444261 \cdot \left(553 \cdot (1 + 100 \cdot Mhp)^2 - 2000000 \cdot Mhp^2 \cdot D_1\right) - 553000000 \cdot D_1\right) - 377825}{4913526660000 \cdot D_1}$$

for $n \in [1..\text{length}(vMhp)]$

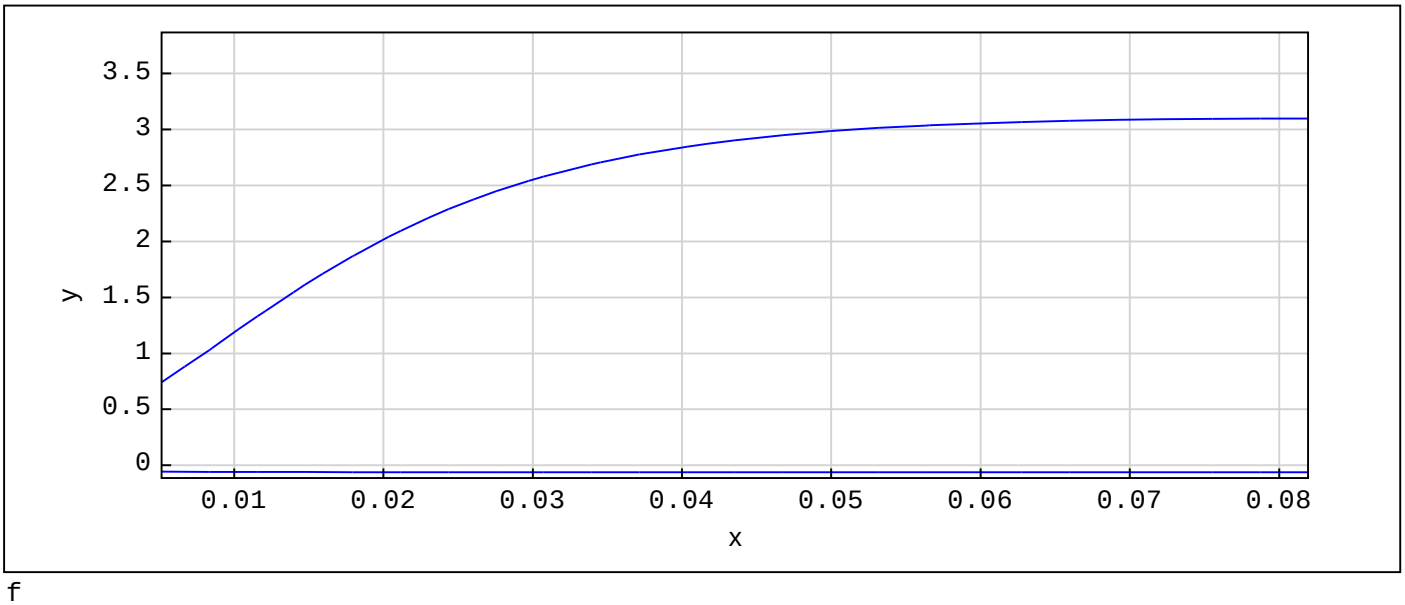
$Mhp := vMhp_n$

$Sols_n := D_1 \,|\, \text{solve}(MomentumBalance_{Ejector}, D_1)$



augment$(vMhp, Sols)$

$f(x, y) := \left\| \begin{bmatrix} Mhp & D_1 \end{bmatrix} := [x \;\; y] \right.$
$\left. MomentumBalance_{Ejector} \right\|$



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