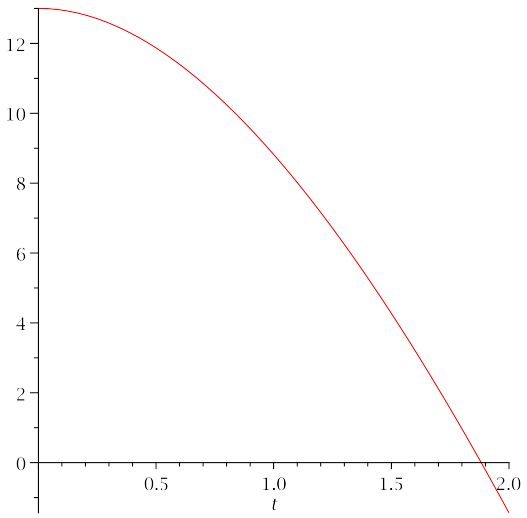
```
restart;

# ######################################################
# Maple-Worksheet zu Übungsblatt 4, Aufgabe 1 b) und c)
# ######################################################
```

```
# Fischadler + Fisch.

# x-Koordinate der Bahnkurve.
x := -(m*v_0/alpha) * (exp(-(alpha/m)*t) - 1);

# y-Koordinate der Bahnkurve.
y := -(m^2*g/alpha^2) * (exp(-(alpha/m)*t) - 1) - (m*g/alpha)*t
+ h;

plot(subs(m=0.2, g=9.81, alpha=0.1, h=13.0, y), t=0.0..2.0);

# Numerische Lösung der Gleichung y(t)=0.
solve(subs(m=0.2, g=9.81, alpha=0.1, h=13.0, y)=0, t);

evalf(subs(alpha=0.1, v_0=10.0, m=0.2, t=1.882, x));
```

$$x := -\frac{m\,v_0\left(e^{-\frac{\alpha t}{m}}-1\right)}{\alpha}$$

$$y := -\frac{m^2 g\left(e^{-\frac{\alpha t}{m}}-1\right)}{\alpha^2} - \frac{m g t}{\alpha} + h$$

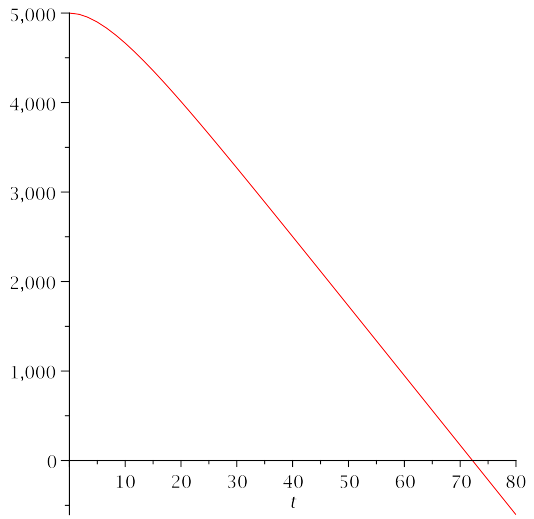


1.882187591, −1.434029478

12.19525194 (1)

```
# Flugzeug + Paket.

# Stärke der Reibungskraft.
alpha_ := 80.0 * 9.81 / (280.0 * 1000 / 3600);

plot(subs(m=80.0, g=9.81, alpha=alpha_, h=5000.0, y), t=0.0.
.80.0);

# Numerische Lösung der Gleichung y(t)=0.
solve(subs(m=80.0, g=9.81, alpha=alpha_, h=5000.0, y)=0, t);

evalf(subs(alpha=alpha_, v_0=500.0 * 1000 / 3600, m=80.0, t=
72.21, x));
```

$$\alpha := 10.09028571$$



72.21325384, −19.40206373

1101.047113 (2)