```
> restart;
> PT:=proc(N)
local i:
global
roeau,roair,mei,Pinit,Vf,Ve,Mf,Cx,a,v,z,h,Vej,dt,k,Pat,g,hinit,me
j,Sinit,Sej,Mtot,Fp,P;
roeau:=1000:
Mtot:=mei+Mf:
Sinit:=Pi*(0.045)**2:
Sej:= Pi*(0.012)**2:
mei:=Ve*roeau:
Vf:=0.0015:
Ve:=0.0005:
hinit:=0.01:
roair:=1.28:
Cx:=0.4:
g:=9.81:
Pinit:=500000:
Pat:=100000:
Mf:=0.2:
for i from 1 to N do
Vej:=table():
P:=table():
h:=table():
mej:=table():
Fp:=table():
a:=table():
v:=table():
z:=table():
mej[0]:=0:
P[0]:=Pinit:
a[0]:=0:
z[k]:=0:
v[k]:=0:
Vej[0]:=0:
h[0]:=0:
dt:=0.0001:
k:=0:
while mej[k]<mei do
Vej[k]:=sqrt((2*(P[k]-Pat)+2*(roeau*g*(hinit-h[k])))/(roeau*(1-
(Sej/Sinit)**2))):
P[k+1]:=Pinit*((Vf-Ve)-(mej[0])/roeau)/((Vf-Ve)-
(mej[k+1])/roeau):
h[k]:=(mei-me[k])/(roeau*Sinit):
mej[k+1]:=evalf(roeau*Vej[k]*Sej*dt+mej[k]):
Fp[k]:=((mej[k+1]-mej[k])/dt)*Vej[k]:
```

```
a[k]:=evalf((-(Mf+mej[k])*g)+(Fp[k]-
(0.5*Cx*roair*Sinit*v[k]**2))/(Mf+mej[k])):
v[k+1]:=((a[k])/dt)+v[k]:
z[k+1]:=((v[k+1])/dt)+v[k]:
k:=k+1:
end:
od:
plot(z([k]));
end proc;

>
>
>
```

```
PT := proc(N)
local i;
global roeau, roair, mei, Pinit, Vf, Ve, Mf, Cx, a, v, z, h, Vej, dt, k, Pat, g, hinit, mej,
Sinit, Sej, Mtot, Fp, P;
    roeau := 1000;
    Mtot := mei + Mf;          Ve := .0005;          Pinit := 500000;          P := table( );
    Sinit := .002025×π;        hinit := .01;         Pat := 100000;            h := table( );
    Sej := .000144×π;          roair := 1.28;        Mf := .2;                 mej := table( );
    mei := Ve×roeau;           Cx := .4;             for i to N do             Fp := table( );
    Vf := .0015;               g := 9.81;                Vej := table( );      a := table( );
        v := table( );             z[k] := 0;
        z := table( );             v[k] := 0;
        mej[0] := 0;               Vej[0] := 0;
        P[0] := Pinit;             h[0] := 0;
        a[0] := 0;                 dt := .0001;
        k := 0;
        while mej[k] < mei do
            Vej[k] := sqrt((2×P[k] – 2×Pat + 2×roeau×g×(hinit – h[k]))/(roeau
                ×(1 – Sej^2/Sinit^2)));
            P[k + 1] :=
```

```
        Pinit*(Vf - Ve - mej[0]/roeau)/(Vf - Ve - mej[k+1]/roeau);
    h[k] := (mei - me[k])/(roeau*Sinit);
    mej[k+1] := evalf(roeau*Vej[k]*Sej*dt + mej[k]);
    Fp[k] := (mej[k+1] - mej[k])*Vej[k]/dt;
    a[k] := evalf(-(Mf + mej[k])*g
        + (Fp[k] - .5*Cx*roair*Sinit*v[k]^2)/(Mf + mej[k]));
    v[k+1] := a[k]/dt + v[k];
    z[k+1] := v[k+1]/dt + v[k];
    k := k + 1
end do
```

```
end do;
plot(z([k]))
end proc
```

```
> PT(10);
`Error, (in PT) cannot evaluate boolean: .4523893422e-
4*(804.0044501+3.099743872*me[1])^(1/2) < .4987170449\n`
```