

## FUNÇÕES

```
import numpy as np

def velocidade (vterm,t,k):
    v = -(vterm)*(1 - np.exp(-t/k))
    return v

def posicao (vterm,t,k):
    y = (-(t*vterm) - ((k*vterm)*np.exp((-t)/k))) + 250
    return y

def aceleracao (vterm,t,k):
    a = ((-1)/t)*(vterm*(np.exp((-t)/k)))
    return a

array_t = np.arange(0, 10.5, 0.5)
```

## POSIÇÃO

```
print ('Posição em cada t: ')
for tempo in array_t:
    yf = posicao(20, tempo, 5)

    print (yf)
```

```
Posição em cada t:
150.0
149.51625819640407
148.1269246922018
145.9181779318282
142.96799539643607
139.34693402873665
135.11883639059735
130.34146962085904
125.06710358827785
119.34303402594009
113.21205588285576
106.71289163019205
99.88057880877977
92.74682069659875
85.34030360583935
77.68698398515701
69.81034820053446
61.731647594726525
53.470111177841346
45.0431380777365
36.46647167633873
```

## VELOCIDADE

```
print('Velocidade em t:')

for tempo in array_t:

    vf = velocidade (20, tempo, 5)

    print (vf)
```

```
Velocidade em t:
-0.0
-1.9032516392808096
-3.6253849384403636
-5.183635586365643
-6.5935990792872134
-7.8693868057473315
-9.023767278119472
-10.06829392417181
-11.013420717655569
-11.868606805188017
-12.642411176571153
-13.34257832603841
-13.976115761755956
-14.54936413931975
-15.068060721167871
-15.537396797031404
-15.962069640106893
-16.346329518945307
-16.69402223556827
-17.008627615547297
-17.293294335267746
```

## ACELERAÇÃO

```
print ('aceleração em t:')

for tempo in array_t:

    af = aceleracao (20, tempo, 5)

    print(af)
```

```
aceleração em t:
-inf
-36.19349672143838
-16.374615061559638
-9.877576275756237
-6.703200460356394
-4.852245277701067
-3.6587442406268424
-2.8376303073794826
-2.246644820586108
-1.8069762655137738
-1.4715177646857693
-1.210440304356653
-1.0039807063740072
```

```
-0.8385593631815772  
-0.7045627541188756  
-0.5950137603958128  
-0.5047412949866384  
-0.4298435860064345  
-0.3673308627146367  
-0.3148813036266001  
-0.2706705664732254
```

```
/usr/local/lib/python3.7/dist-packages/ipykernel_launcher.py:12: RuntimeWarning: divi  
if sys.path[0] == '':
```



✓ 0s conclusão: 16:09

