

mplLi014R

```
> restart;
```

```
> y(k+1)=1.01*y(k)-450;
```

$$y(k+1) = 1.01 y(k) - 450$$

(1)

```
> Y[0]:=10000;
```

$$Y_0 := 10000$$

(2)

```
> n:=50;
```

```
> for k from 0 to n do
```

```
  Y[k+1]:=1.01*Y[k]-450:
```

```
od:
```

```
> k:='k':
```

```
> Y[1];
```

9650.00

(3)

```
> seq(Y[k],k=0..26);
```

10000, 9650.00, 9296.5000, 8939.465000, 8578.859650, 8214.648246, 7846.794728,
7475.262675, 7100.015302, 6721.015455, 6338.225610, 5951.607866, 5561.123945,
5166.735184, 4768.402536, 4366.086561, 3959.747427, 3549.344901, 3134.838350,
2716.186734, 2293.348601, 1866.282087, 1434.944908, 999.294357, 559.287301,
114.8801740, -333.9710243

(4)

2 vuotta+ 2 kk

```
> 26*450;
```

11700

(5)

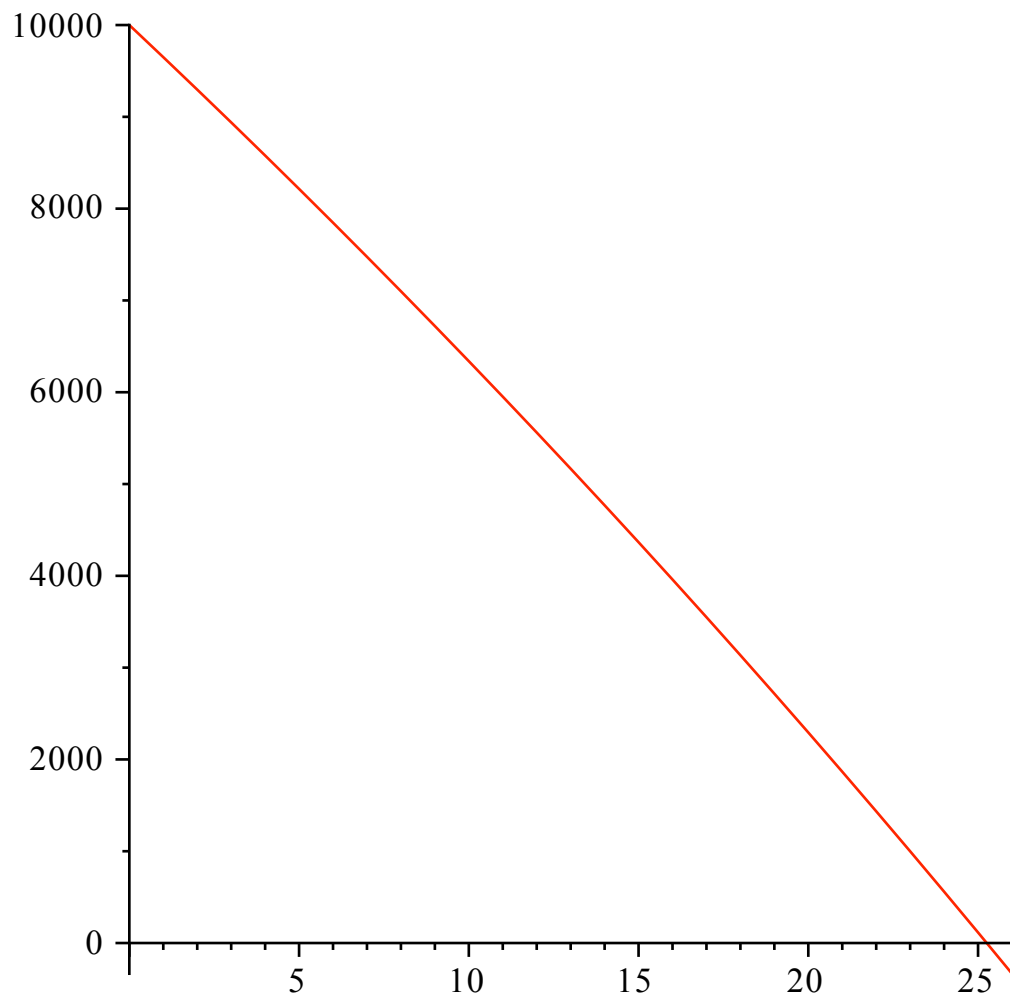
Tämän verran rahaa kuluu (-risat viimeisestä).

```
> taulukko:=seq([k,Y[k]],k=0..26);
```

```
taulukko := [0, 10000], [1, 9650.00], [2, 9296.5000], [3, 8939.465000], [4, 8578.859650],  
[5, 8214.648246], [6, 7846.794728], [7, 7475.262675], [8, 7100.015302], [9,  
6721.015455], [10, 6338.225610], [11, 5951.607866], [12, 5561.123945], [13,  
5166.735184], [14, 4768.402536], [15, 4366.086561], [16, 3959.747427], [17,  
3549.344901], [18, 3134.838350], [19, 2716.186734], [20, 2293.348601], [21,  
1866.282087], [22, 1434.944908], [23, 999.294357], [24, 559.287301], [25,  
114.8801740], [26, -333.9710243]
```

(6)

```
> plot([taulukko]);
```



```
> matrix([taulukko]);
```

0	10000
1	9650.00
2	9296.5000
3	8939.465000
4	8578.859650
5	8214.648246
6	7846.794728
7	7475.262675
8	7100.015302
9	6721.015455
10	6338.225610
11	5951.607866
12	5561.123945
13	5166.735184
14	4768.402536
15	4366.086561
16	3959.747427
17	3549.344901
18	3134.838350
19	2716.186734
20	2293.348601
21	1866.282087
22	1434.944908
23	999.294357
24	559.287301
25	114.8801740
26	-333.9710243

(7)

```
> k:='k':yk:=1.01^k*y0-450*(1-1.01^k)/(1-1.01);
```

$$yk := 1.01^k y_0 + 45000.00000 - 45000.00000 \cdot 1.01^k$$

(8)

```
> y0:=10000:seq(yk,k=0..26);
```

```
10000.00000, 9650.00000, 9296.50000, 8939.46500, 8578.85965, 8214.64825, 7846.79471,
7475.26268, 7100.01529, 6721.01545, 6338.22563, 5951.60785, 5561.12395, 5166.73520,
4768.40255, 4366.08657, 3959.74743, 3549.34491, 3134.83834, 2716.18675, 2293.34860,
1866.28210, 1434.94490, 999.29437, 559.28729, 114.88017, -333.97103
```

(9)

Voitais tietysti myös ratkaista "analyttisesti" (geom. summa, kuten jo lukiossa), mutta olkoon johdatusta differenssiyhtälöihin.