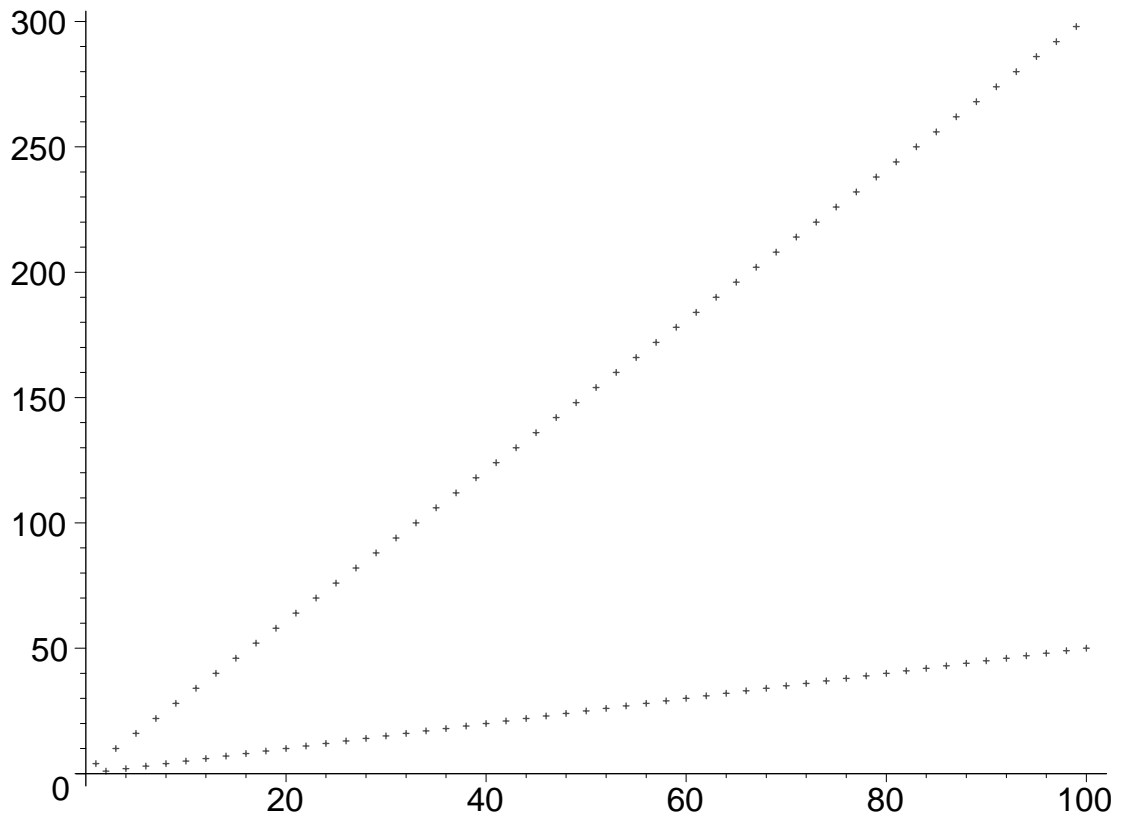


```
> seq([n, f(n)], n=1..10);  
[1, 4], [2, 1], [3, 10], [4, 2], [5, 16], [6, 3], [7, 22], [8, 4], [9, 28],  
  [10, 5]  
> plot([seq([n, f(n)], n=1..100)], style=point);
```



```
> f(3);
```

```
10
```

```
> f(10);
```

```
5
```

```
> f(5);
```

```
16
```

```
> f(16);
```

```
8
```

```
> f(8);
```

```
4
```

```
> f(4);
```

```
2
```

```

> f(2);
                                1
> f(1);
                                4
> seq((f@@n)(3),n=1..10);
                                10,5,16,8,4,2,1,4,2,1
> seq((f@@n)(30),n=1..25);
15,46,23,70,35,106,53,160,80,40,20,10,5,16,8,4,2,1,4,2,
  1,4,2,1,4
> seq((f@@n)(43),n=1..30);
130,65,196,98,49,148,74,37,112,56,28,14,7,22,11,34,17,
  52,26,13,40,20,10,5,16,8,4,2,1,4
> seq((f@@n)(27),n=1..130);
82,41,124,62,31,94,47,142,71,214,107,322,161,484,242,
  121,364,182,91,274,137,412,206,103,310,155,466,233,700
  350,175,526,263,790,395,1186,593,1780,890,445,1336,
  668,334,167,502,251,754,377,1132,566,283,850,425,1276,
  638,319,958,479,1438,719,2158,1079,3238,1619,4858,
  2429,7288,3644,1822,911,2734,1367,4102,2051,6154,3077,
  9232,4616,2308,1154,577,1732,866,433,1300,650,325,976,
  488,244,122,61,184,92,46,23,70,35,106,53,160,80,40,20,
  10,5,16,8,4,2,1,4,2,1,4,2,1,4,2,1,4,2,1,4,2,1,4,2,1,4
> a[0]:=3;
                                a0:=3
> for k from 1 to 10 do

```

```
> a[k]:=f(a[k-1]);  
> end do;
```

$$a_1 := 10$$

$$a_2 := 5$$

$$a_3 := 16$$

$$a_4 := 8$$

$$a_5 := 4$$

$$a_6 := 2$$

$$a_7 := 1$$

$$a_8 := 4$$

$$a_9 := 2$$

$$a_{10} := 1$$

```
> for k from 1 while(a[k-1]>1) do  
> a[k]:=f(a[k-1]);  
> end do;
```

$$a_1 := 10$$

$$a_2 := 5$$

$$a_3 := 16$$

$$a_4 := 8$$

$$a_5 := 4$$

$$a_6 := 2$$

$$a_7 := 1$$

```
> k-1;
```

7

[>

> F:=proc(n) local a,k:

> a[0]:=n:

> for k from 1 while(a[k-1]>1) do

> a[k]:=f(a[k-1]);

> end do;

> k-1:

> end proc:

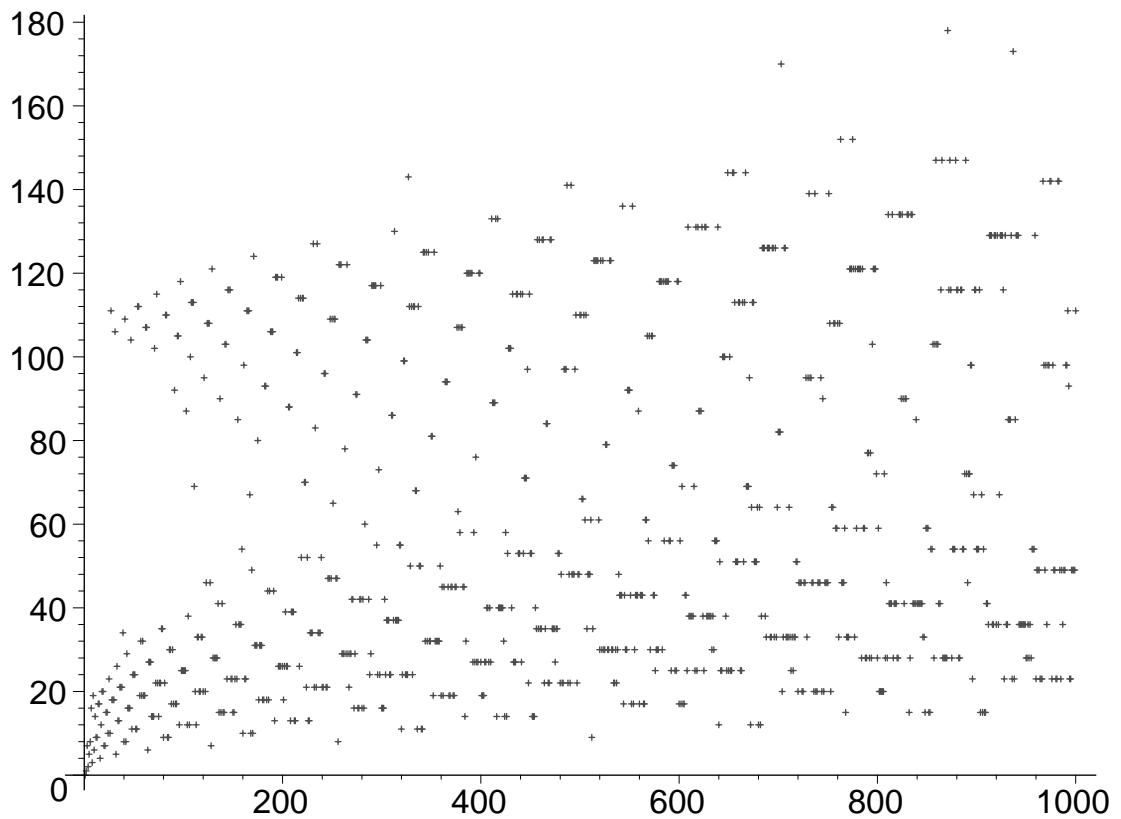
[> F(27);

111

[> F(3);

7

[> plot([seq([n,F(n)],n=1..1000)],style=point)
;



```
> fibo:=n->if n<3 then 1 else
  fibo(n-1)+fibo(n-2) end if;
```

```
fibo := proc(n)
```

```
  option operator, arrow;
```

```
    if n < 3 then 1 else fibo(n - 1) + fibo(n - 2) end if
```

```
end proc
```

```
> fibo(3);
```

2

```
> fibo(4);
```

3

```
> fibo(30);
```

832040

```
> fibo:=proc(n)
> option remember;
> if n<3 then 1 else fibo(n-1)+fibo(n-2) end
  if
> end proc;
```

fibo := **proc**(*n*)

option *remember*;

if $n < 3$ **then** 1 **else** fibo($n - 1$) + fibo($n - 2$) **end if**

end proc

```
> fibo(30);
```

832040

```
> fibo(250);
```

7896325826131730509282738943634332893686268675876375

```
> fibo:=proc(n)
> option remember;
> if n=1 then x elif n=2 then y else
  fibo(n-1)+fibo(n-2) end if
> end proc;
```

fibo := **proc**(*n*)

option *remember*;

if $n = 1$ **then** x

elif $n = 2$ **then** y

else fibo($n - 1$) + fibo($n - 2$)

end if

end proc

```
> fibo(1);
```



```

[
      x
> fibo(3);
      y+x
> fibo(55);
      86267571272 y+ 53316291173 x
> agm:=proc(n)
> option remember:
> if n=1 then [1,3] else
> [(agm(n-1)[1]+agm(n-1)[2])/2, sqrt(agm(n-1)[
  1]*agm(n-1)[2])]
> end if
> end proc;
agm := proc(n)
option remember;
      if  $n = 1$  then [1, 3]
      else [1 / 2*agm( $n - 1$ )[1] + 1 / 2*agm( $n - 1$ )[2],
            sqrt(agm( $n - 1$ )[1]*agm( $n - 1$ )[2])]
      end if
end proc
> agm(2);
      [2,  $\sqrt{3}$ ]
> agm(4);
      [  $\frac{1}{2} + \frac{1}{4}\sqrt{3} + \frac{1}{2}\sqrt{2} 3^{(1/4)}$ ,  $\sqrt{\left(1 + \frac{1}{2}\sqrt{3}\right)\sqrt{2} 3^{(1/4)}}$  ]
> evalf(agm(4));
      [1.863617561, 1.863616005]

```

```
[ > evalf ( agm ( 7 ) , 80 ) ;  
[1.86361678324489654235568903102427059515753285682\  
68537223251061083547493746055355, 1.863616783244896\  
5423556890310242705951575328568268537221157763456\  
019022145531789]  
[ >
```