```
> n:=2:
> plus:=proc(k)
> global n;
> n:=n+k;
> end:
> plus(3);
```

$$5$$

```
> plus(3);
```

$$8$$

```
> suivant:=proc(n)
> if n=0 then 1
> else 1+suivant(n-1)
> fi
> end:
> suivant(800);
```

```
Error, (in suivant) too many levels of recursion
```

```
> suivant_rec:=proc(n,resultat)
> if n=0 then resultat
> else suivant_rec(n-1,resultat+1)
> fi
> end:
> suivant_total:=proc(n)
> suivant_rec(n,1)
> end:
> suivant_total(990);
```

$$991$$

```
> fact:=proc(n) option remember;
> if n<0 then 0
> elif n=0 then 1
> else n*fact(n-1)
> fi
> end:

> fact(800);
```

```
Error, (in fact) too many levels of recursion
```

```
> fact_rec:=proc(n,res)
> if n<0 then 0
> elif n=0 then res
> else fact_rec(n-1,n*res)
> fi
> end:
> fact_total:=proc(n)
> fact_rec(n,1)
> end:
> fact_total(985);
```

$$44716433446226865297525545123690840313062516942184720734793020717\
98821379253565968306613351265829848113613445915037481020993323651\
18793824742910933816289257377234179780068300662699370564156675006\
79564249640327327920537268788396694098173789139381673604925495638\
57027480932229208402871893020310004870912743108313639562467568815\
18476744443012496987893182676941139528320177292379749628765230557\
82126402722326258636449021359785421562396880951093189166460381215\
97617794828779272489293554782080457324036837218894858270752685608\
34974486544829235266196102803632524434040137986305700077696231465\
93356313931933907070484020205769584921618091580150318758293841310\
38188722552880706007544514557426569986905605626900372302810612762\
46643984848652108711065866555159401413587661304717836585599818845\
63846578863597225260519436665632090219238250237633889169262706554\
56170798465789509857190685287365358840264090822170332567916354133\
41560225019935756241171049623330728724259722874287107530034512168\
12472611067750547688153151908945142655116396639013396391348258601\
79005982876978199104065368156683135437990768064875964629675111520\
47466207953811379012602178063102972605925914596822321131693111321\
31526621051153945921669854796325881510204221309404004127566382402\
98173774202549004188727761912856365457612100383596040699067273160\
42062613813535512635534468580620174882746741416157853373670502937\
16782592583392200276972656278895465139141215975141133787563924516\
24711535717657011452402191631328121963439477078270896281356203012\
00554982941551872500693935045422376090798752481818786809037804194\
90052416156370818029711491237029086036868255772602700115413221007\
82816567904481307310341564423770887624520536285585934845224080153\
16960170608107255572539842433001997578377820330648347017261764535\
29790603214704755478491373461991549058550649572415833183522270043\
95080592189260524229742643135935635511703832086143759245770354111\
30893973042810557679570946821658194919474980648289748479798363592\
95913039350085872262516337702582611527548878883289828709749303093\
57964403502600314388434570297094291533215036417555108717805129779\
57568493495980028553601605271395850974515621752911439479666302324\
90955699411377170196362274060853751745280804970460679842304084658\
20691652933366699602978870786671988002110382023879767290720902814\
10560000000000000000000000000000000000000000000000000000000000000\
00000000000000000000000000000000000000000000000000000000000000000\
00000000000000000000000000000000000000000000000000000000000000000\
00000000000000000000000000000000000000000000000000000000000000000

```
> Im(2+I);
```

$$1$$

```
> partie_entiere_pos:=proc(n)
> if n<1 then 0
> else 1+partie_entiere_pos(n-1)
> fi
> end:
> partie_entiere_pos(753.20005);
```

$$753$$

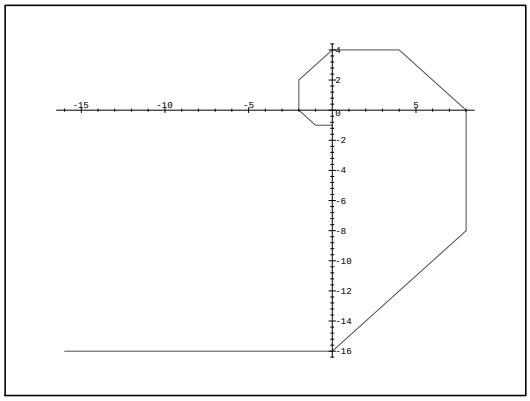
```
> partie_entiere:=proc(n)
> if n>=0 and n<1 then 0
> elif n>=1 then 1+partie_entiere(n-1)
> else partie_entiere(n+1)-1
> fi
> end:

> partie_entiere(45.115648);
```

$$45$$

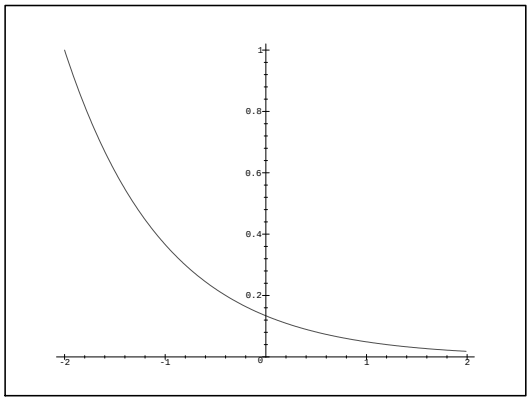
```
> partie_entiere(-45.45343);
```

$$-46$$

```
> spirale_rec:=proc(n,z,liste_point)
> if n=0 then liste_point
> else
> spirale_rec(n-1,evalc(z*exp(-I*Pi/4)*sqrt(2)),[op(liste_point),[Re(z),
> Im(z)]])
> fi
> end:
> spirale:=proc(n)
> plot([spirale_rec(n,-I,[])]);
> end:
> spirale(10);
```




```
> euler_rec:=proc(f,x,xmax,y,h,liste)
> if x>=xmax then liste
> else euler_rec(f,x+h,xmax,y+f(y,x)*h,h,[op(liste),[x,y]])
> fi
> end:

> Euler:=proc(f,xo,xmax,yo,h)
> plot([euler_rec(f,xo,xmax,yo,h,[])])
> end:
> Euler((y,x)->-y,-2,2,1,0.01);
```



```
> dicho_rec:=proc(f,a,b,eps)
> if b-a<eps then 0.5*(b+a)
> elif f(a)*f(0.5*(b+a))>0 then dicho_rec(f,0.5*(b+a),b,eps)
> else dicho_rec(f,a,0.5*(b+a),eps)
> fi
> end:
> dicho_rec(x->x^2-2,1.0,2.0,0.00000001);
```

$$1.414213559$$

```
> newton_rec:=proc(f,x,eps)
> if evalf(abs(f(x)/D(f)(x)),100)<eps then
> evalf(x,floor(abs(log[10](eps))))
> else newton_rec(f,evalf(x-f(x)/D(f)(x),100),eps)
> fi
> end:
> newton_rec(x->x^2-2,1.0,10.0^(-50));
```

$$1.4142135623730950488016887242096980785696718753769$$

```
> evalf(sqrt(2),50);
```

$$1.4142135623730950488016887242096980785696718753769$$

```
> DL:=proc(f,n)
> if n=0 then f(0)
> else (D@@n)(f)(0)*x^n/n!+DL(f,n-1)
> fi;
> end:
> DL(x->tan(x),15);
```

$$\frac{929569}{638512875}\,x^{15}+\frac{21844}{6081075}\,x^{13}+\frac{1382}{155925}\,x^{11}+\frac{62}{2835}\,x^{9}+\frac{17}{315}\,x^{7}+\frac{2}{15}\,x^{5}+\frac{1}{3}\,x^{3}+x$$

```
> rectangles:=proc(f,a,b,h)
> if a>b then 0 else f(a)*h+rectangles(f,a+h,b,h) fi;
> end:
> 4*rectangles(x->1/(1+x^2),0,1,0.01);
```

$$3.171575988$$