

```

1 restart,maple_mode(1);cas_setup(0,0,0,1,0,1e-10,25,[1,50,0,25],0,0,0);#radians,pas de cmplx, pas de Sqrt
[C C1 C2 M1 M2 M3 O1 O2 T d dm m n o r1 r2 t t1 t2 zs ], Warning: some commands like subs mi
2 -----EXERCICE-----
3 Attention pour les utilisateurs de maple, root[3](23) ne marche pas, il fait juste racine carree.
4 root(3,23);

$$23^{\frac{1}{3}}$$

5 root(3,23.);evalf(root(3,23.));root(3,approx(23))
( 2.8438669798515654776954396 , 2.8438669798515654776954396 , 2.8438669798515654776954396 )
6 evalf(Pi,1000);
3.1415926535897932384626433832795028841971693993751058209749445923078164062862089986280348253421170679821480
7 Attention mettre plusieurs Digits:= sur une meme ligne a l'air de poser probleme
8 Digits:=1000;
[ 0 0 0 1 0 1e-10 1000 [ 1 50 0 25 ] 0 0 0 ]
9 sqrt(2.0);
1.4142135623730950488016887242096980785696718753769480731766797379907324784621070388503875343276415727350138
10 Digits:=10;
[ 0 0 0 1 0 1e-10 10 [ 1 50 0 25 ] 0 0 0 ]
11 sqrt(3.0);
1.732050808
12 P:=expand(simplify((2*x+1)^2*(x^5-1)/(x-1)));

$$4 \cdot x^6 + 8 \cdot x^5 + 9 \cdot x^4 + 9 \cdot x^3 + 9 \cdot x^2 + 5 \cdot x + 1$$

13 factor(X^12-1);

$$(X^2 + 1) \cdot (X^4 - X^2 + 1) \cdot (X + 1) \cdot (X^2 - X + 1) \cdot (X^2 + X + 1) \cdot (X - 1)$$

14 phi12 est le facteur qui n'apparait pas dans:
15 factor(X^6-1);factor(X^4-1);

$$((X + 1) \cdot (X^2 - X + 1) \cdot (X^2 + X + 1) \cdot (X - 1), (X^2 + 1) \cdot (X + 1) \cdot (X - 1))$$

16 complex_mode:=1;factor(P*1.1);factor(approx(P));

$$4.4 \cdot (x + -0.3090169944 - 0.9510565163 \cdot i) \cdot (x + -0.3090169944 + 0.9510565163 \cdot i) \cdot 4.0 \cdot (x + 0.5) \cdot (x + 0.5) \cdot (x + 0.8090169944 - 0.5877852523 \cdot i) \cdot (x + 0.8090169944 + 0.5877852523 \cdot i) \cdot (x + 0.5 - 6.773255088e-09 \cdot i) \cdot (x + 0.5 + 6.773255088e-09 \cdot i) \cdot (x + 0.8090169944 - 0.5877852523 \cdot i) \cdot (x + 0.8090169944 + 0.5877852523 \cdot i) \cdot (x + -0.3090169944 + 0.9510565163 \cdot i) \cdot (x + -0.3090169944 - 0.9510565163 \cdot i)$$

17 complex_mode:=0;factor(P*1.0);factor(approx(P,5));factor(P);
( 0, (x^4 + x^3 + x^2 + x + 1) \cdot (2 \cdot x + 1)^2, (x^2 + -0.6180339887 \cdot x + 1) \cdot (x^2 + 1.618033989 \cdot x + 1) \cdot (x + 0.5)^2, (x^4 + x^3 + x^2 + x + 1) \cdot (2 \cdot x + 1)^2 )
18 factor(X^12-1,sqrt(3));

$$(X^2 + \sqrt{3} \cdot X + 1) \cdot (X^2 + 1) \cdot (X^2 + (-\sqrt{3}) \cdot X + 1) \cdot (X - 1) \cdot (X + 1) \cdot (X^2 + X + 1) \cdot (X^2 - X + 1)$$

19 factor(X^12-1,[sqrt(3),I]);

$$(X + \frac{\sqrt{3}+1}{2}) \cdot (X + 1) \cdot (X + -1) \cdot (X + \frac{\sqrt{3}+1}{2}) \cdot (X + -\frac{\sqrt{3}+1}{2}) \cdot (X + -\frac{\sqrt{3}+1}{2}) \cdot (X + \frac{1 \cdot \sqrt{3}-1}{2}) \cdot (X + \frac{1 \cdot \sqrt{3}+1}{2}) \cdot (X + \frac{1 \cdot \sqrt{3}-1}{2}) \cdot (X + \frac{1 \cdot \sqrt{3}+1}{2}) \cdot (X + -\frac{\sqrt{3}+1}{2}) \cdot (X + -\frac{\sqrt{3}+1}{2})$$

20 selon les versions, cFactor(...,a) est plus sur si l'on veut etre sur que l a ete utilise. (en fait ca veut plutot dire Q[l,a] factor)
21 cFactor(X^12-1,sqrt(3));#est probablement plus sur

$$(X + -\frac{\sqrt{3}+1}{2}) \cdot (X + -\frac{\sqrt{3}+1}{2}) \cdot (X + \frac{\sqrt{3}+1}{2}) \cdot (X + 1) \cdot (X + -1) \cdot (X + \frac{\sqrt{3}+1}{2}) \cdot (X + \frac{1 \cdot \sqrt{3}-1}{2}) \cdot (X + \frac{1 \cdot \sqrt{3}+1}{2}) \cdot (X + -\frac{\sqrt{3}+1}{2}) \cdot (X + \frac{1 \cdot \sqrt{3}-1}{2}) \cdot (X + -\frac{\sqrt{3}+1}{2}) \cdot (X + -\frac{\sqrt{3}+1}{2})$$

22 -----EXERCICE-----

```

23 `trigexpand(cos(5*a));`

$$16 \cdot \cos(a)^5 - 20 \cdot \cos(a)^3 + 5 \cdot \cos(a)$$

24 `normal(int(cos(5*x)/(2+sin(x)),x=0..Pi/2));#simplify ne marche pas.`

$$-209 \cdot \ln(2) - (-209) \cdot \ln(3) + \frac{-254}{3}$$

25 `P:=int(cos(5*x)/(2+sin(x)),x);`

$$2 \cdot \left(\frac{209 \cdot \ln\left(\tan\left(\frac{x}{2}\right) + \tan\left(\frac{x}{2}\right) + 1\right)}{2} + \frac{(-209) \cdot \ln\left(\tan\left(\frac{x}{2}\right) + 1\right)}{2} + \frac{5225 \cdot \tan\left(\frac{x}{2}\right)^8 + (-2496) \cdot \tan\left(\frac{x}{2}\right)^7 + 22148 \cdot \tan\left(\frac{x}{2}\right)^6 + (-8512) \cdot \tan\left(\frac{x}{2}\right)^5 + 1514 \cdot \tan\left(\frac{x}{2}\right)^4 + 104 \cdot \tan\left(\frac{x}{2}\right)^3 - 209 \cdot \tan\left(\frac{x}{2}\right)^2 - 209 \cdot \tan\left(\frac{x}{2}\right) + 209}{2} \right)$$

26 La forme developpee avant l'integration est plus simple:

27 `P:=int(trigexpand(cos(5*x)/(2+sin(x))),x);`

$$4 \cdot \sin(x)^4 + \frac{(-32) \cdot \sin(x)^3}{3} + 26 \cdot \sin(x)^2 - 104 \cdot \sin(x) + 209 \cdot \ln(\sin(x) + 2)$$

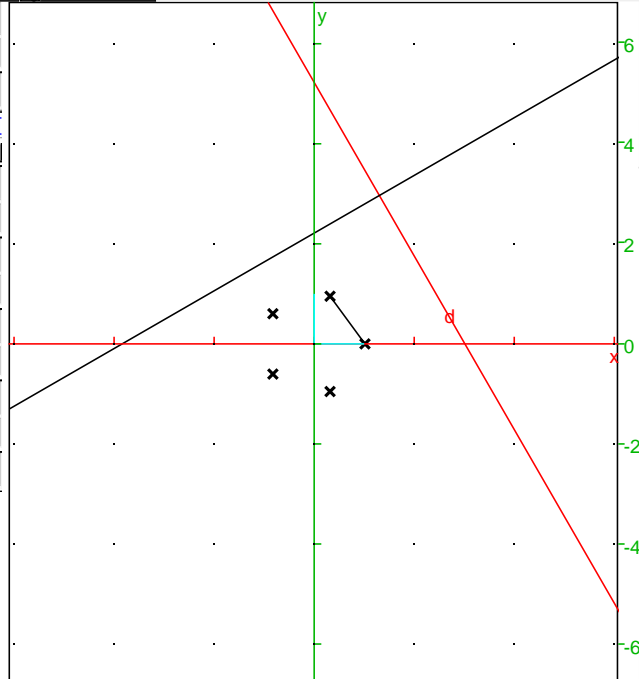
28 `simplify(diff(P,x)-cos(5*x)/(2+sin(x)));`

$$0$$

29 -----EXERCICE-----

30 Fig Edit Graphe Pointeur Modé Save

```
1 zs:=exp(2*I*Pi/5);
2 rootof([1,0,0],[1,-1,-1,1])
3 [seq(point(zs^i,affichage=point_width_2),i=0..4)];
4 [point(1,0),point(rootof([1,0,0],[1,-1,-1,1])),point(rootof([1,0,0],[1,-1,-1,1]))];
5 segment(point(1),point(zs));
6 segment(point(1,0),point(rootof([1,0,0],[1,-1,-1,1])));
7 d:=droite(point(3),point(3+exp(2*I*Pi/3)),'affichage'=red);
8 droite(y=(-(sqrt(3))*x+3*sqrt(3)))
9 t:=element((-5) .. 3,-3.84)
10 parameter(t,-5,3,-3.84)
11 perpendiculaire(point(t),d);
12 droite(y=(0.5773502692*x+2.217025034))
13
```



```

31 Prog Edit Ajouter      |      |      |      |      |      |
   puis:=proc(a,n)
     local A,B,C;
     A:=1;B:=a;C:=n;
     while C>0 do
       if irem(C,2)=1 then A:=A*B;C:=(C-1)/2;B:=B*B
       else C:=(C)/2;B:=B*B;
       fi;
     od;
     A;
   end;

```

```

// Success
// End defining puis

```

```

proc(a,n)
local A,B,C;
A:=1;
B:=a;
C:=n;
while C>0 do
  if irem(C,2)=1 then
    A:=A*B;
    C:=(C-1)/2;
    B:=B*B else
    C:=C/2;
    B:=B*B
  fi;
od;
A;
end;

```

```
32 puis(2,7);
```

128

```
33 debug(puis(2,71));
```

Evaluation time: 1.96

2361183241434822606848

```
34 convert(71,base,2);
```

[1 1 1 0 0 0 1]

```
35 M:=t->(cos(t)/sin(t)^3,sin(t)/sin(t)^3)
```

```

// Success
// End defining M

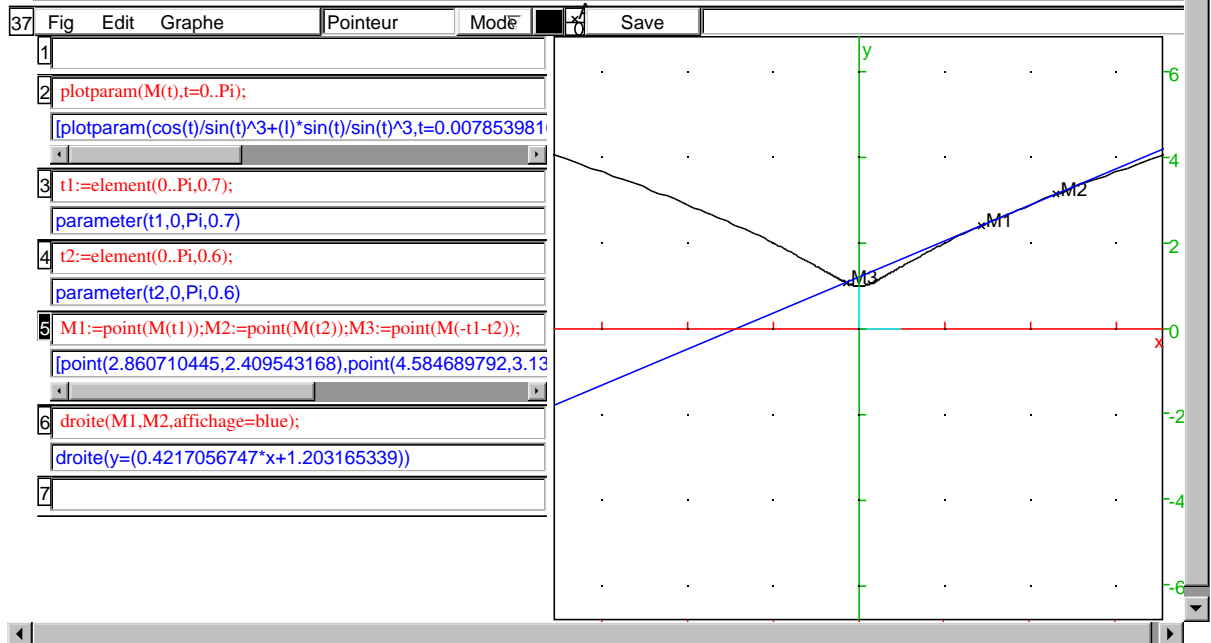
```

```

begin
'nop';
(cos(t))/(sin(t)^3),(sin(t))/(sin(t)^3);
t -> end

```

```
36
```



```

1
2 plotparam(M(t),t=0..Pi);
[plotparam(cos(t)/sin(t)^3+(1)*sin(t)/sin(t)^3,t=0.007853981
3 t1:=element(0..Pi,0.7);
parameter(t1,0,Pi,0.7)
4 t2:=element(0..Pi,0.6);
parameter(t2,0,Pi,0.6)
5 M1:=point(M(t1));M2:=point(M(t2));M3:=point(M(-t1-t2));
[point(2.860710445,2.409543168),point(4.584689792,3.13
6 droite(M1,M2,affichage=blue);
droite(y=(0.4217056747*x+1.203165339))
7

```