

PV25: PRIMEROS MAXIPASITOS

1 Evalúa las siguientes operaciones

(% i1) 2^{64} ;

18446744073709551616 (% o1)

(% i2) 5^{1000} ;

933263618503218878990089544723817169617091446371708024621714339795966910975775634454440327097881
(% o2)

(% i3) $\text{float}(3+7/10)$;

3.7 (% o3)

(% i5) $\text{fpprec:100}\$b\text{float}(\%pi)$;

3.1415926535897932384626433832795028841971693993751058209749445923078164062862089986280348253421
(% o5)

(% i6) $\text{set_display('ascii)}$

(% i8) $\text{fpprec:200}\$b\text{float}(\%e)$;

(%o8)2.7182818284590452353602874713526624977572470936999595749669676277240766\303535475945713821

(% i10) $\text{fpprec:300}\$b\text{float}(\%phi)$;

(%o10)1.618033988749894848204586834365638117720309179805762862135448622705260\462818902449707207

2 Simplifica las siguientes instrucciones

(% i12) $\text{set_display('xml)}\$(2*x^2)/(4*x^2-4*x*y)=\text{ratsimp}((2*x^2)/(4*x^2-4*x*y))$;

$$\frac{2x^2}{4x^2 - 4xy} = -\frac{x}{2y - 2x} \quad (\% o12)$$

(% i13) '(4*a^2*b^3)/(24*a^3*b^3-36*a^3*b^4)=ratsimp((4*a^2*b^3)/(24*a^3*b^3-36*a^3*b^4));

$$\frac{4a^2 b^3}{24a^3 b^3 - 36a^3 b^4} = -\frac{1}{9ab - 6a} \quad (\% \text{ o13})$$

(% i14) '(x-4*y)/(2*x*y)+(x-2)/(5*x^2)+1/(10*x)=ratsimp((x-4*y)/(2*x*y)+(x-2)/(5*x^2)+1/(10*x));

$$\frac{x-4y}{2xy} + \frac{1}{10x} + \frac{x-2}{5x^2} = -\frac{(17x+4)y-5x^2}{10x^2y} \quad (\% \text{ o14})$$

(% i15) 'sqrt(x^4-10*x^3+29*x^2-20*x+4)=radcan(sqrt(x^4-10*x^3+29*x^2-20*x+4));

$$\sqrt{x^4 - 10x^3 + 29x^2 - 20x + 4} = x^2 - 5x + 2 \quad (\% \text{ o15})$$

(% i16) '((log(x^2+x)-log(x))^a/log(x+1)^(a/2))=radcan((log(x^2+x)-log(x))^a/log(x+1)^(a/2));

$$\frac{(\log(x^2+x) - \log(x))^a}{\log(x+1)^{\frac{a}{2}}} = \log(x+1)^{\frac{a}{2}} \quad (\% \text{ o16})$$

3 Desarrolla las siguientes expresiones:

(% i17) '(a+b)^5=expand((a+b)^5);

$$(b+a)^5 = b^5 + 5ab^4 + 10a^2b^3 + 10a^3b^2 + 5a^4b + a^5 \quad (\% \text{ o17})$$

(% i18) '(1+x^3)*(1-y)^2=expand((1+x^3)*(1-y)^2);

$$(x^3+1)(1-y)^2 = x^3y^2 + y^2 - 2x^3y - 2y + x^3 + 1 \quad (\% \text{ o18})$$

4 Factoriza la siguiente expresión

(% i19) '(-b^2*y-2*a*b*y-a^2*y+b^2*x+2*a*b*x+a^2*x)=factor(-b^2*y-2*a*b*y-a^2*y+b^2*x+2*a*b*x+a^2*x);

$$-b^2y - 2aby - a^2y + b^2x + 2abx + a^2x = -(b+a)^2(y-x) \quad (\% \text{ o19})$$

5 Resuelve las siguientes ecuaciones:

(% i20) ec1:a*(x+a)-x=a*(a+1)+1;

$$a(x+a) - x = a(a+1) + 1 \quad (\text{ec1})$$

(% i21) soln:solve(ec1,x);

$$\left[x = \frac{a+1}{a-1} \right] \quad (\text{soln})$$

(% i22) rhs(soln[1]);

$$\frac{a+1}{a-1} \quad (\% \text{ o22})$$

(% i23) ec2:x/3+x/4=2*x-17;

$$\frac{7x}{12} = 2x - 17 \quad (\text{ec2})$$

(% i24) solve(ec2);

$$[x = 12] \quad (\% \text{ o24})$$

(% i25) ec3:sin(x)+1/2*cos(x)=0;

$$\sin(x) + \frac{\cos(x)}{2} = 0 \quad (\text{ec3})$$

(% i26) to_poly_solve(ec3,x);

$$\% \text{union} \left(\left[x = 2\pi\%z1028 - \frac{\text{atan}\left(\frac{4}{3}\right)}{2} \right], \left[x = 2\pi\%z963 - \frac{\text{atan}\left(\frac{4}{3}\right)}{2} + \pi \right] \right) \quad (\% \text{ o26})$$

6 Calcula las raices del siguiente polinomio

(% i27) allroots(x^2+x+1);

$$[x = 0.8660254037844386\%i - 0.5, x = -0.8660254037844386\%i - 0.5] \quad (\% \text{ o27})$$

(% i28) p(x):=x^2+x+1;

$$p(x) := x^2 + x + 1 \quad (\% \text{ o28})$$

(% i29) p(5000);

$$25005001 \quad (\% \text{ o29})$$

7 Grafica las funciones

(% i30) f(x):=sin(1/(2*x)+3);

$$f(x) := \sin\left(\frac{1}{2x} + 3\right) \quad (\% \text{ o30})$$

(% i31) f(1);

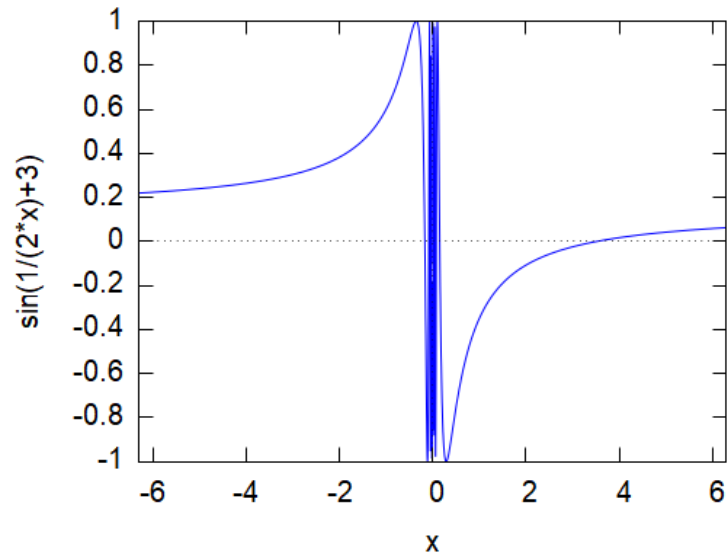
$$\sin\left(\frac{7}{2}\right) \quad (\% \text{ o31})$$

(% i32) f(a);

$$\sin\left(\frac{1}{2a} + 3\right) \quad (\% \text{ o32})$$

(% i33) wxplot2d([f(x)], [x,-2*%pi,2*%pi])\$

plot2d : expression evaluatestonon-numericvaluesomewhereinplottingrange.



(% t33)

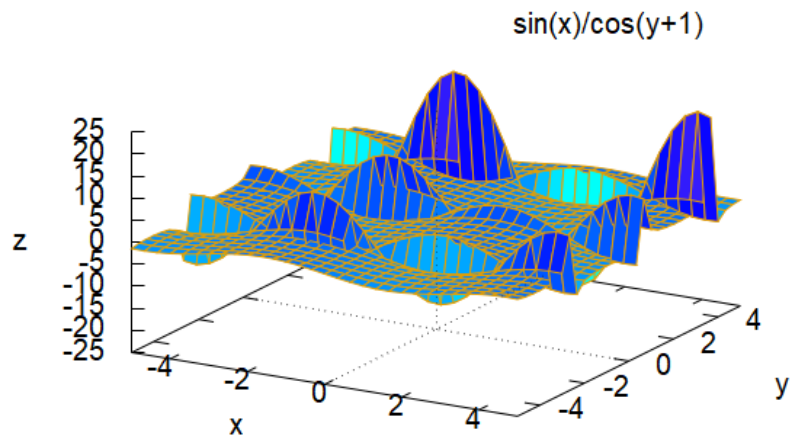
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(% i34) $\sin(x)/\cos(y+1)$;

$$\frac{\sin(x)}{\cos(y+1)}$$

(% o34)

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(% i35) wxplot3d(sin(x)/cos(y+1), [x,-5,5], [y,-5,5]);
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(% t35)
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(% o35)
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