```
> p:=x^2+9*x-11;
```

$$p := x^2 + 9\,x - 11$$

```
> solve(p,x);
```

$$-\frac{9}{2} + \frac{5}{2}\sqrt{5},\ -\frac{9}{2} - \frac{5}{2}\sqrt{5}$$

```
> q:=3*x^3-5*x+1;
```

$$q := 3\,x^3 - 5\,x + 1$$

```
> solve(q,x);
```

```
> simplify(evalc(%[2]));
```

$$-\frac{1}{3}\sqrt{5}\left(\cos\left(-\frac{1}{3}\arctan\left(\frac{1}{9}\sqrt{419}\right)+\frac{1}{3}\pi\right)+\sqrt{3}\,\sin\left(-\frac{1}{3}\arctan\left(\frac{1}{9}\sqrt{419}\right)+\frac{1}{3}\pi\right)\right)$$

```
> evalf(%);
```

-1.381298482

```
> r:=x^7-12*x^4+2*x^2+3*x+9;
```

$$r := x^7 - 12\,x^4 + 2\,x^2 + 3\,x + 9$$

```
> solve(r=0,x);
```

$\mathrm{RootOf}(\_Z^7 - 12\,\_Z^4 + 2\,\_Z^2 + 3\,\_Z + 9,\ index = 1),$
$\mathrm{RootOf}(\_Z^7 - 12\,\_Z^4 + 2\,\_Z^2 + 3\,\_Z + 9,\ index = 2),$
$\mathrm{RootOf}(\_Z^7 - 12\,\_Z^4 + 2\,\_Z^2 + 3\,\_Z + 9,\ index = 3),$
$\mathrm{RootOf}(\_Z^7 - 12\,\_Z^4 + 2\,\_Z^2 + 3\,\_Z + 9,\ index = 4),$
$\mathrm{RootOf}(\_Z^7 - 12\,\_Z^4 + 2\,\_Z^2 + 3\,\_Z + 9,\ index = 5),$
$\mathrm{RootOf}(\_Z^7 - 12\,\_Z^4 + 2\,\_Z^2 + 3\,\_Z + 9,\ index = 6),$
$\mathrm{RootOf}(\_Z^7 - 12\,\_Z^4 + 2\,\_Z^2 + 3\,\_Z + 9,\ index = 7)$

```
> fsolve(r=0,x,complex);
```

```
> s:=x^10-2*x^8+x^6-x^5-x^4+2*x^3+2*x^2-x-1;
```

$$s := x^{10} - 2\,x^8 + x^6 - x^5 - x^4 + 2\,x^3 + 2\,x^2 - x - 1$$

```
> ns:=solve(s=0,x);
```

$ns :=$ -1, -1, 1, 1, $\mathrm{RootOf}(\_Z^6 - \_Z - 1,\ index = 1),\ \mathrm{RootOf}(\_Z^6 - \_Z - 1,\ index = 2),$
$\mathrm{RootOf}(\_Z^6 - \_Z - 1,\ index = 3),\ \mathrm{RootOf}(\_Z^6 - \_Z - 1,\ index = 4),$
$\mathrm{RootOf}(\_Z^6 - \_Z - 1,\ index = 5),\ \mathrm{RootOf}(\_Z^6 - \_Z - 1,\ index = 6)$

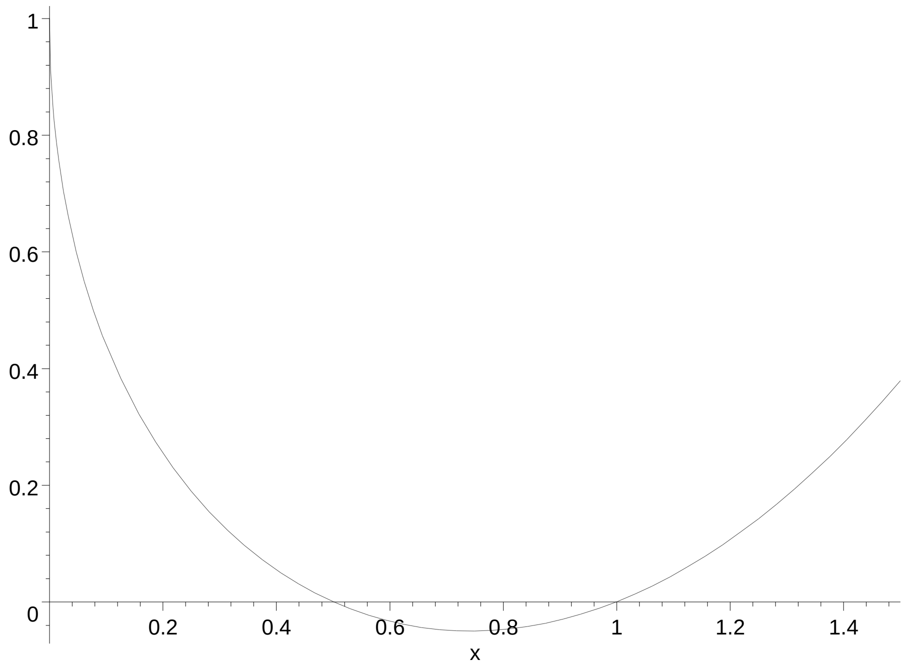
```
> evalf(ns[5]);
```

1.134724138

```
> solve(2^x=2*sqrt(x),x);
```

$$\frac{1}{2}, 1$$

```
> plot(2^x-2*sqrt(x),x=0..1.5);
```



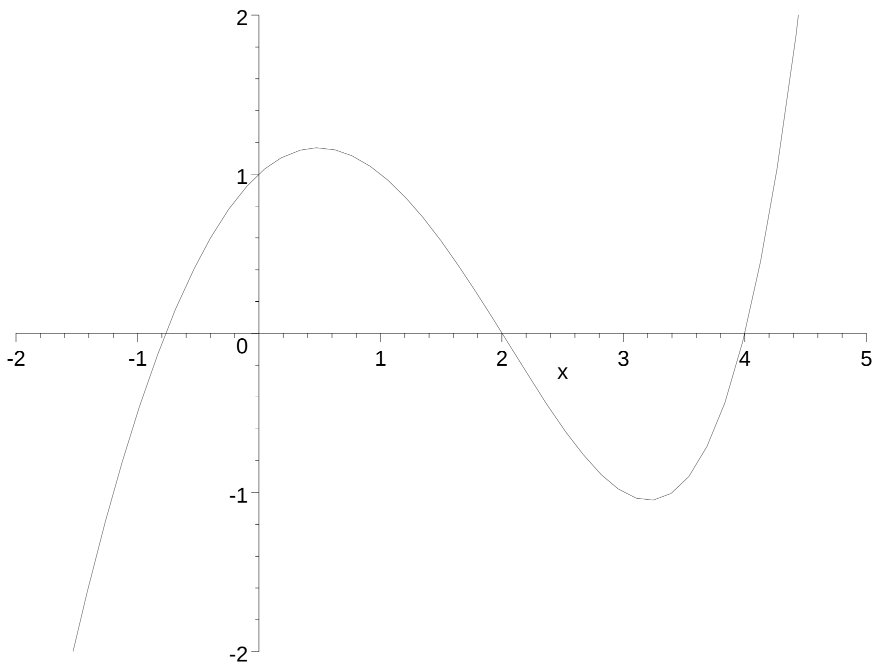

```
> solve(2^x-x^2,x);
```

$$2, 4, -2\,\frac{\mathrm{LambertW}\left(\frac{1}{2}\ln(2)\right)}{\ln(2)}$$

```
> evalf(%);
```

2., 4., -.7666646958

```
> plot(2^x-x^2,x=-2..5,-2..2);
```




```
> gl1:=x+2*y+3*z=1;
```

$$gl1 := x + 2\,y + 3\,z = 1$$

```
> gl2:=4*x+5*y+6*z=-2;
```

$$gl2 := 4\,x + 5\,y + 6\,z = -2$$

```
> gl3:=7*x+8*y+a*z=b;
```

$$gl3 := 7\,x + 8\,y + a\,z = b$$

```
> solve({gl1,gl2,gl3},{x,y,z});
```

$$\{z = \frac{5+b}{-9+a},\ y = 2\,\frac{-14-b+a}{-9+a},\ x = -\frac{-32-b+3\,a}{-9+a}\}$$

```
> solve({gl1,gl2,subs(a=9,gl3)},{x,y,z});
> f:=sin(Pi*x);
```

$$f := \sin(\pi\,x)$$

```
> n:=10;
```

$$n := 10$$

```
> g:=sum((-1)^k*(Pi*x)^(2*k+1)/(2*k+1)!,k=0..n);
```

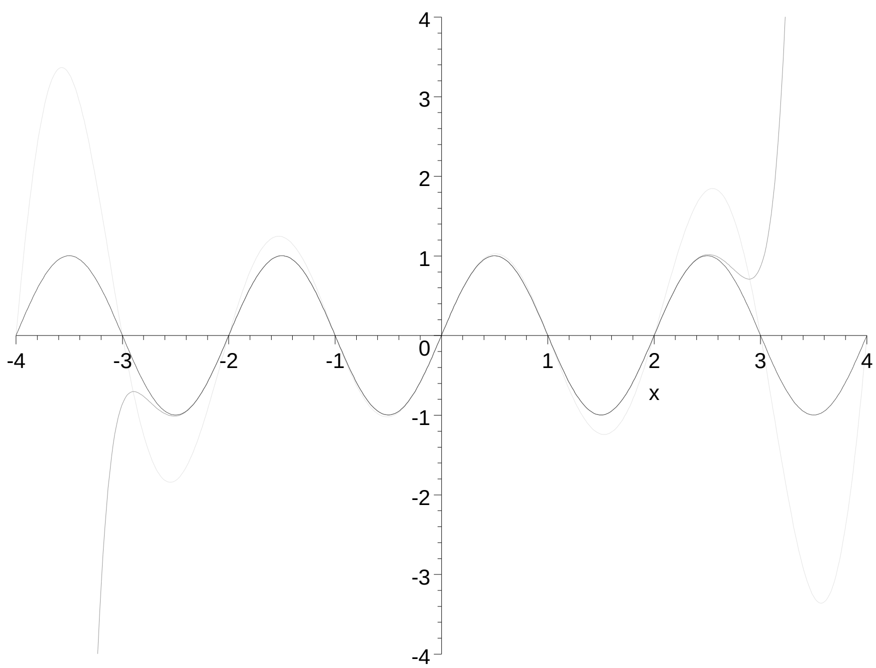
$$g := \pi\,x - \frac{1}{6}\pi^3 x^3 + \frac{1}{120}\pi^5 x^5 - \frac{1}{5040}\pi^7 x^7 + \frac{1}{362880}\pi^9 x^9 - \frac{1}{39916800}\pi^{11} x^{11} + \frac{1}{6227020800}\pi^{13} x^{13} - \frac{1}{1307674368000}\pi^{15} x^{15} + \frac{1}{355687428096000}\pi^{17} x^{17}$$

$$-\frac{1}{121645100408832000}\pi^{19}x^{19}+\frac{1}{51090942171709440000}\pi^{21}x^{21}$$

```
> h:=Pi*x*product(1-x^2/k^2,k=1..10);
```

$$h:=\pi x(1-x^2)\left(1-\frac{1}{4}x^2\right)\left(1-\frac{1}{9}x^2\right)\left(1-\frac{1}{16}x^2\right)\left(1-\frac{1}{25}x^2\right)\left(1-\frac{1}{36}x^2\right)\left(1-\frac{1}{49}x^2\right)\left(1-\frac{1}{64}x^2\right)\left(1-\frac{1}{81}x^2\right)\left(1-\frac{1}{100}x^2\right)$$

```
> plot({f,g,h},x=-4..4,-4..4,numpoints=500);
```




```
> solve(3*x^3+4*x^2>1,x);
```

$$\text{RealRange}\left(\text{Open}(-1),\text{Open}\left(-\frac{1}{6}-\frac{1}{6}\sqrt{13}\right)\right),\text{RealRange}\left(\text{Open}\left(-\frac{1}{6}+\frac{1}{6}\sqrt{13}\right),\infty\right)$$

```
>
>
```