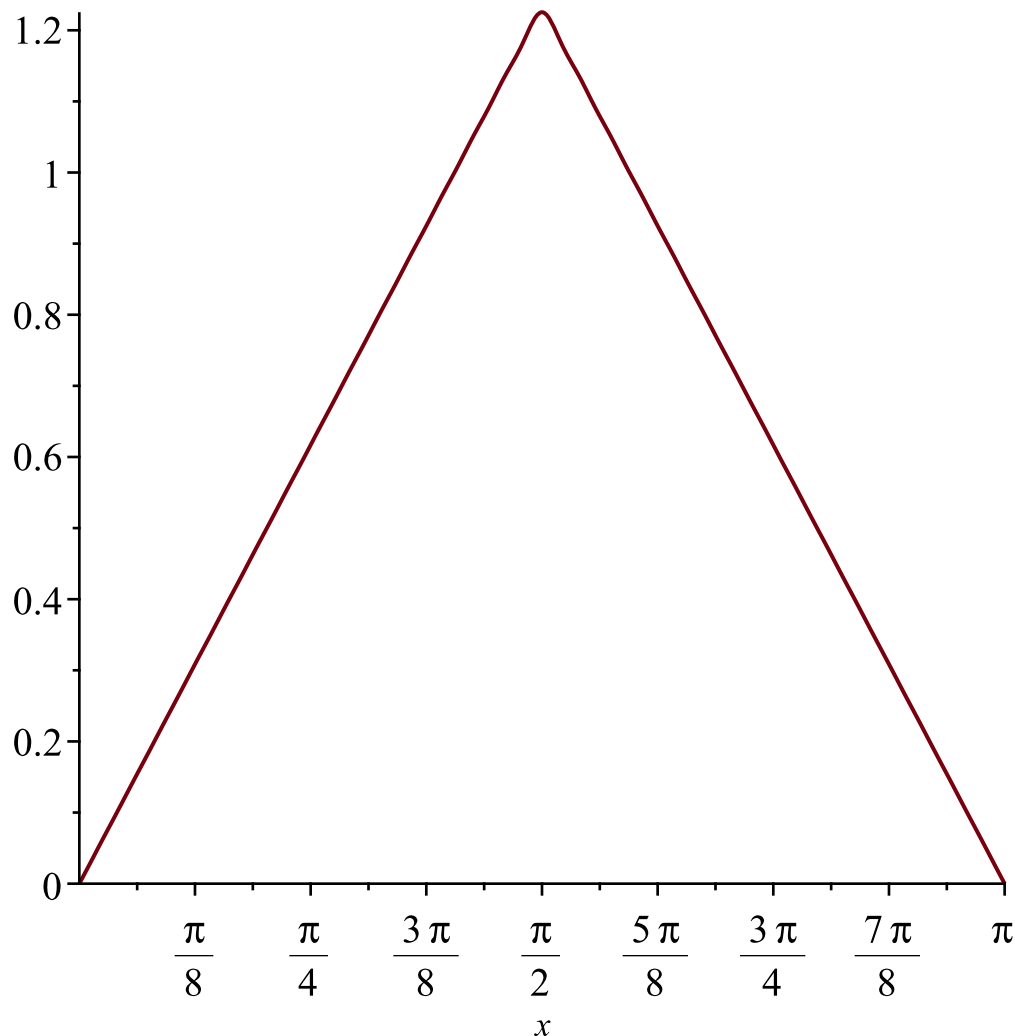


```
> with(plots):
> S := x -> sum( ((-1)^(n+1)/(2*n-1)^2)*sin((2*n-1)*x) , n=1..30);
```

$$S := x \mapsto \sum_{n=1}^{30} \frac{(-1)^{n+1} \sin((2n-1)x)}{(2n-1)^2}$$

```
> plot( S(x) , x=0..Pi);
```



```
> u := (x,t) -> sum( ((-1)^(n+1)/(2*n-1)^2)*sin((2*n-1)*x)*cos((2*
n-1)*t) , n=1..10);
```

$$u := (x, t) \mapsto \sum_{n=1}^{10} \frac{(-1)^{n+1} \sin((2n-1)x) \cos((2n-1)t)}{(2n-1)^2}$$

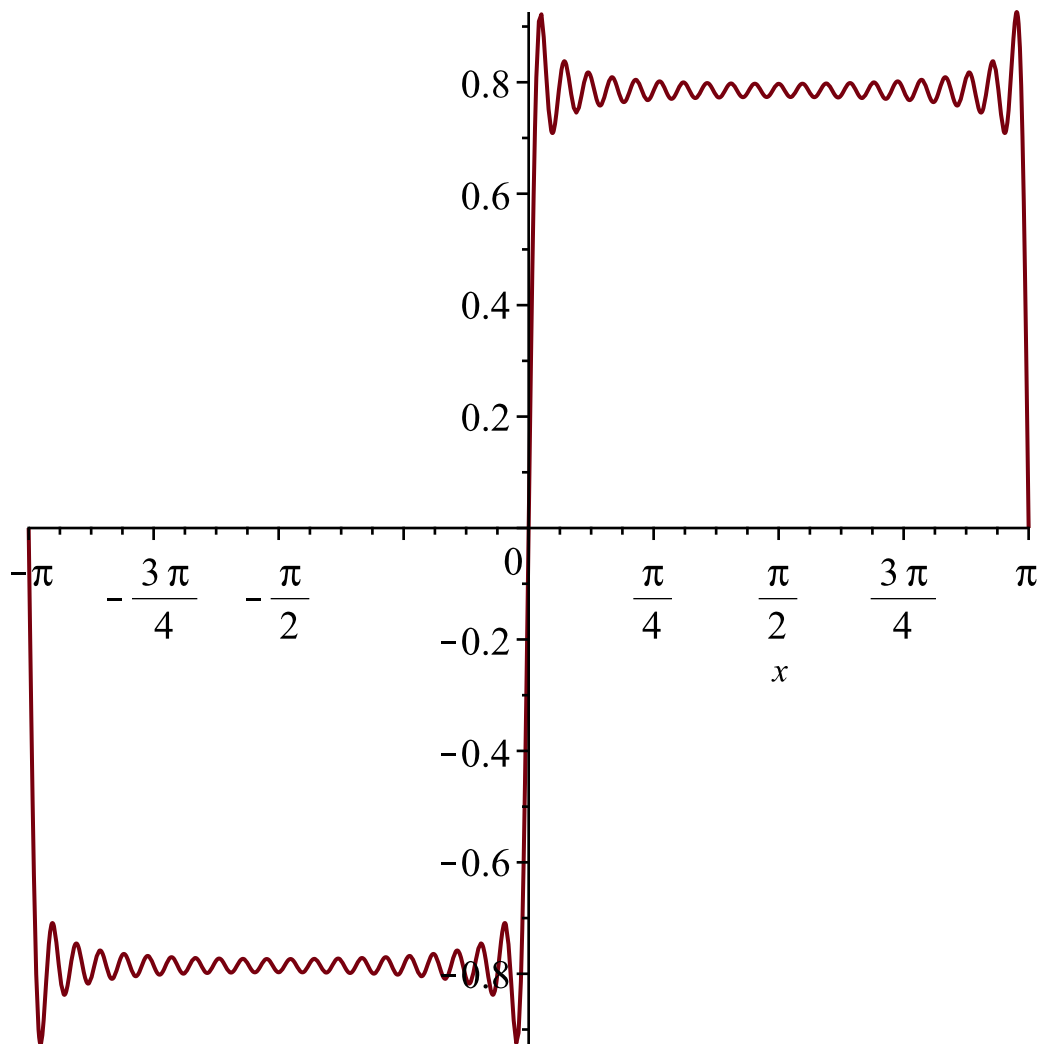
```
> animate( u(x,t) , x=0..Pi, t=0..2*Pi);
```

```
> animate3d( sin(2*x)*sin(2*y)*cos(2*t), x=0..Pi, y=0..Pi, t=0..2*
Pi);
```

```
> f := x -> sum( (1/(2*n+1)) * sin( (2*n+1)*x ) , n=0..20);
```

$$f := x \mapsto \sum_{n=0}^{20} \frac{\sin((2n+1)x)}{2n+1}$$

```
> plot( f(x) , x=-Pi..Pi );
```



```
> p := r^5-3*r^4+3*r^3-3*r^2+2*r;
```

$$p := r^5 - 3r^4 + 3r^3 - 3r^2 + 2r$$

(1)

```
> factor(p);
```

$$r(r-1)(r-2)(r^2+1)$$

(2)

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

$$0, 1, 2, I, -I$$

(3)

```
> Digits :=50;
```

$$\text{Digits} := 50$$

(4)

```
> evalf(Pi);
```

$$3.1415926535897932384626433832795028841971693993751$$

(5)

```
> ?factor
```

```
> diff(exp(tan(x^7*sin(3*x))),x$5); # Differentiate 5 times with
respect to x!
```

```
> solve(r^7+7*r^5-3*r^4+3*r^3-3*r^2+2*r+1,r);
```

```
RootOf(_Z^7 + 7 _Z^5 - 3 _Z^4 + 3 _Z^3 - 3 _Z^2 + 2 _Z + 1, index=1), RootOf(_Z^7 + 7 _Z^5
- 3 _Z^4 + 3 _Z^3 - 3 _Z^2 + 2 _Z + 1, index=2), RootOf(_Z^7 + 7 _Z^5 - 3 _Z^4 + 3 _Z^3
- 3 _Z^2 + 2 _Z + 1, index=3), RootOf(_Z^7 + 7 _Z^5 - 3 _Z^4 + 3 _Z^3 - 3 _Z^2 + 2 _Z + 1,
index=4), RootOf(_Z^7 + 7 _Z^5 - 3 _Z^4 + 3 _Z^3 - 3 _Z^2 + 2 _Z + 1, index=5),
RootOf(_Z^7 + 7 _Z^5 - 3 _Z^4 + 3 _Z^3 - 3 _Z^2 + 2 _Z + 1, index=6), RootOf(_Z^7 + 7 _Z^5
- 3 _Z^4 + 3 _Z^3 - 3 _Z^2 + 2 _Z + 1, index=7)
```

```
> evalf({solve(r^7+7*r^5-3*r^4+3*r^3-3*r^2+2*r+1,r)});
```

```
{-0.3014269521, -0.2984001959 - 0.8461224779 I, -0.2984001959 + 0.8461224779 I,
-0.1997233684 - 2.586082473 I, -0.1997233684 + 2.586082473 I, 0.6488370404
- 0.4377269776 I, 0.6488370404 + 0.4377269776 I}
```

```
> F := (w,c) -> 1/sqrt( (1-w^2)^2+ c^2*w^2);
```

$$F := (w, c) \mapsto \frac{1}{\sqrt{(-w^2 + 1)^2 + c^2 w^2}} \quad (8)$$

```
> plot( { seq(F(w, .1*n),n=1..10)}, w=0..2);
```

