```
> with(plots):
> integrate(x*sin(n*x),x=0..Pi/2)+integrate((Pi-x)*sin(n*x),x=
  (Pi/2)..Pi);
```

$$-\frac{n\cos\left(\frac{\pi n}{2}\right)\pi-2\sin\left(\frac{\pi n}{2}\right)}{2n^2}+\frac{n\cos\left(\frac{\pi n}{2}\right)\pi-2\sin(\pi n)+2\sin\left(\frac{\pi n}{2}\right)}{2n^2} \tag{1}$$

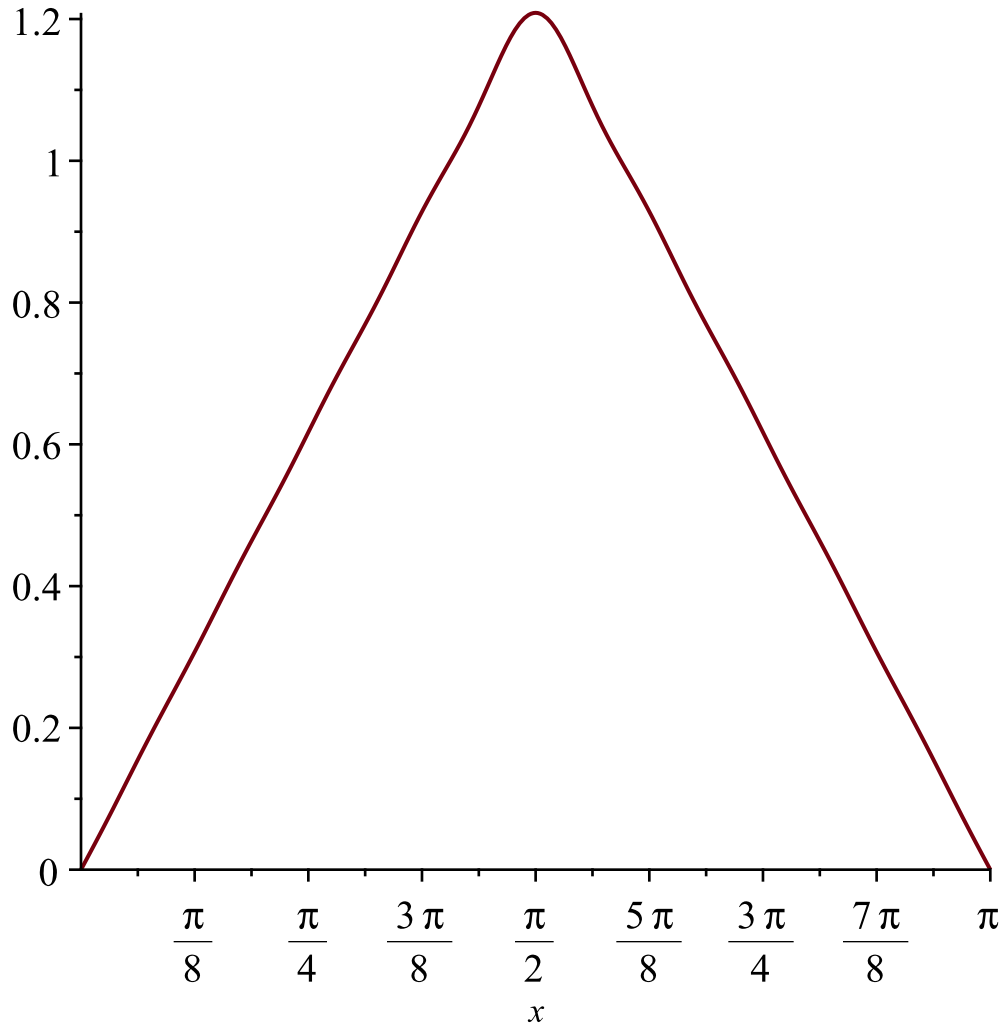
```
> simplify(%);
```

$$\frac{2\sin\left(\frac{\pi n}{2}\right)-\sin(\pi n)}{n^2} \tag{2}$$

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

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

```
> 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..5);
```

$$f := x \mapsto \sum_{n=0}^{5} \frac{\sin((2n+1)x)}{2n+1}$$

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