

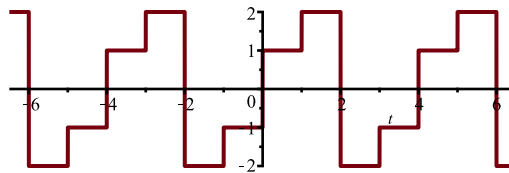
```
> restart:
```

```
> make_periodic:=proc(f::algebraic, x::name, a, b)
    return eval(f, x = x - floor((x-a)/(b-a)) * (b-a));
end:
```

```
> f:=t->piecewise(t>-2 and t<-1, -2, t<0 and t>-1, -1, t>0 and t<1, 1, t>1 and t<2, 2);
f_per:=t->make_periodic(f(t), t, -2, 2);
plot(f_per(t), t=-6.5..6.5, scaling=constrained)
```

$$f := t \mapsto \begin{cases} -2 & -2 < t < -1 \\ -1 & -1 < t < 0 \\ 1 & 0 < t < 1 \\ 2 & 1 < t < 2 \end{cases}$$

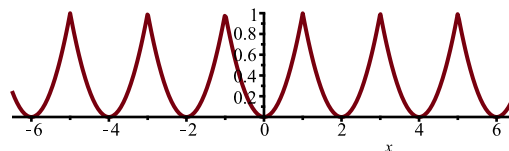
$$f_per := t \mapsto \text{make_periodic}(f(t), t, -2, 2)$$



```
> f:=x->piecewise(x<1,x^2,(2-x)^2);
f_per:=t->make_periodic(f(t), x, 0, 2);
plot(f_per(x), x=-6.5..6.5, view=[-6.5..6.5,0..1])
```

$$f := x \mapsto \begin{cases} x^2 & x < 1 \\ (2-x)^2 & \text{otherwise} \end{cases}$$

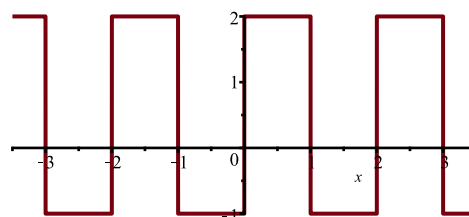
$$f_per := t \mapsto \text{make_periodic}(f(t), x, 0, 2)$$



```
> f:=x->piecewise(x>-1 and x<0, -1, x>0 and x<1, 2);
f_per:=x->make_periodic(f(x),x,-1,1);
plot(f_per(x), x=-3.5..3.5, scaling=constrained)
```

$$f := x \mapsto \begin{cases} -1 & -1 < x < 0 \\ 2 & 0 < x < 1 \end{cases}$$

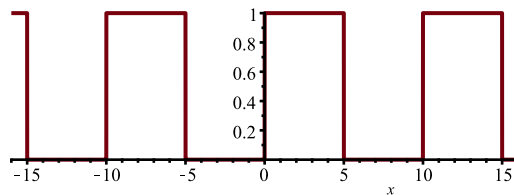
$$f_per := x \mapsto \text{make_periodic}(f(x), x, -1, 1)$$



```
> f:=x->piecewise(x>-5 and x<-1, 0, x>0 and x<5, 1);
f_per:=x->make_periodic(f(x),x,-5,5);
plot(f_per(x), x=-16..16)
```

$$f := x \mapsto \begin{cases} 0 & -5 < x < -1 \\ 1 & 0 < x < 5 \end{cases}$$

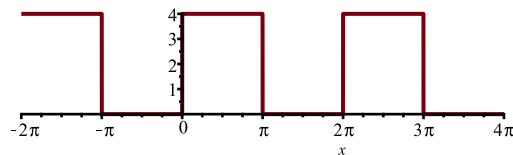
$$f_{\text{per}} := x \mapsto \text{make_periodic}(f(x), x, -5, 5)$$



```
> f:=x->piecewise(x>-Pi and x<0, 0, x>0 and x<Pi, 4);
f_per:=x->make_periodic(f(x),x,-Pi,Pi);
plot(f_per(x), x=-2*Pi..4*Pi, scaling=constrained)
```

$$f := x \mapsto \begin{cases} 0 & -\pi < x < 0 \\ 4 & 0 < x < \pi \end{cases}$$

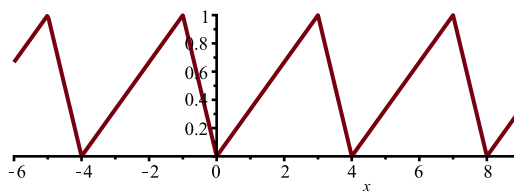
$$f_{\text{per}} := x \mapsto \text{make_periodic}(f(x), x, -\pi, \pi)$$



```
> f:=x->piecewise(x>-1 and x<=0, -x, x>0 and x<=3, 1/3*x);
f_per:=x->make_periodic(f(x),x,-1,3);
plot(f_per(x), x=-6..9,view=[-6..9,0..1]);
```

$$f := x \mapsto \begin{cases} -x & -1 < x \leq 0 \\ \frac{x}{3} & 0 < x \leq 3 \end{cases}$$

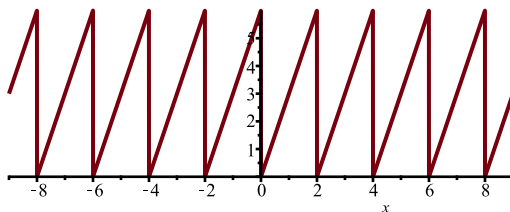
$$f_{\text{per}} := x \mapsto \text{make_periodic}(f(x), x, -1, 3)$$



```
> f:=x->piecewise(x>-2 and x<0, 3*x+6, x>0 and x<2, 3*x);
f_per:=x->make_periodic(f(x),x,-2,2);
plot(f_per(x), x=-9..9,scaling=constrained)
```

$$f := x \mapsto \begin{cases} 3 \cdot x + 6 & -2 < x < 0 \\ 3 \cdot x & 0 < x < 2 \end{cases}$$

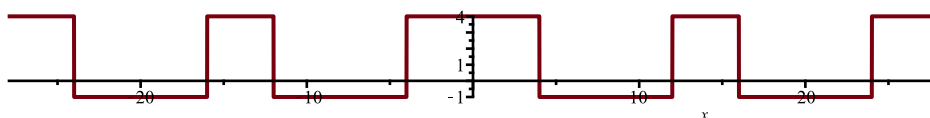
$$f_{\text{per}} := x \mapsto \text{make_periodic}(f(x), x, -2, 2)$$



```
> f:=x->piecewise(x>-12 and x<-4, -1, x>-4 and x<4, 4, x>4 and x<12, -1, x>12 and x<16, 4);
f_per:=x->make_periodic(f(x),x,-12,16);
plot(f_per(x), x=-28..28, scaling=constrained)
```

$$f := x \mapsto \begin{cases} -1 & -12 < x < -4 \\ 4 & -4 < x < 4 \\ -1 & 4 < x < 12 \\ 4 & 12 < x < 16 \end{cases}$$

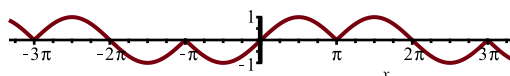
$f_{\text{per}} := x \mapsto \text{make_periodic}(f(x), x, -12, 16)$



```
> f:=x->piecewise(x>-2*Pi and x<0, -abs(sin(x)), x>0 and x<2*Pi, abs(sin(x)));
f_per:=x->make_periodic(f(x),x,-2*Pi,2*Pi);
plot(f_per(x), x=-10/3*Pi..10/3*Pi,scaling=constrained)
```

$$f := x \mapsto \begin{cases} -|\sin(x)| & -2 \cdot \pi < x < 0 \\ |\sin(x)| & 0 < x < 2 \cdot \pi \end{cases}$$

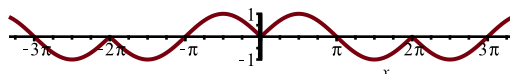
$f_{\text{per}} := x \mapsto \text{make_periodic}(f(x), x, -2 \cdot \pi, 2 \cdot \pi)$



```
> f:=x->piecewise(x>-2*Pi and x<0, -sin(x), x>0 and x<2*Pi, sin(x));
f_per:=x->make_periodic(f(x),x,-2*Pi,2*Pi);
plot(f_per(x), x=-10/3*Pi..10/3*Pi,scaling=constrained)
```

$$f := x \mapsto \begin{cases} -\sin(x) & -2 \cdot \pi < x < 0 \\ \sin(x) & 0 < x < 2 \cdot \pi \end{cases}$$

$f_{\text{per}} := x \mapsto \text{make_periodic}(f(x), x, -2 \cdot \pi, 2 \cdot \pi)$

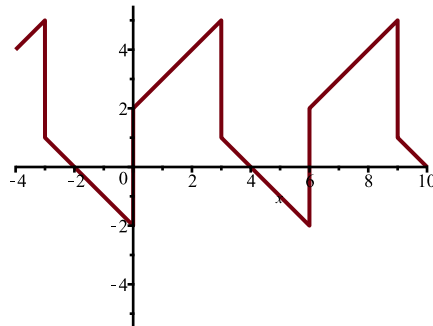


```
> f:=x->piecewise(x>-3 and x<0, -x-2, x>0 and x<3, x+2);
f_per:=x->make_periodic(f(x),x,-3,3);
```

```
plot(f_per(x), x=-4..10, view=[-4..10, -5.5..5.5], scaling=constrained)
```

$$f := x \mapsto \begin{cases} -x - 2 & -3 < x < 0 \\ x + 2 & 0 < x < 3 \end{cases}$$

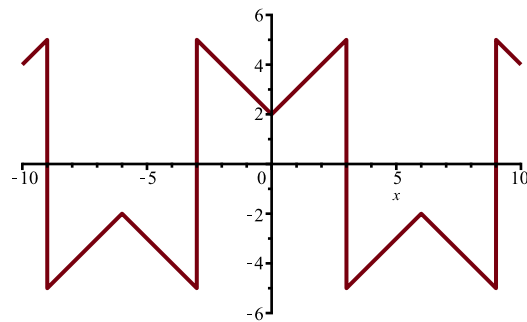
$$f_{\text{per}} := x \mapsto \text{make_periodic}(f(x), x, -3, 3)$$



```
> f:=x->piecewise(x>-6 and x<-3, -x-8, x>-3 and x<0, -x+2, x>0 and x<3, x+2, x>3 and x<6, x-8);
f_per:=x->make_periodic(f(x),x,-6,6);
plot(f_per(x), x=-10..10, view=[-10..10, -6..6], scaling=constrained)
```

$$f := x \mapsto \begin{cases} -x - 8 & -6 < x < -3 \\ 2 - x & -3 < x < 0 \\ x + 2 & 0 < x < 3 \\ x - 8 & 3 < x < 6 \end{cases}$$

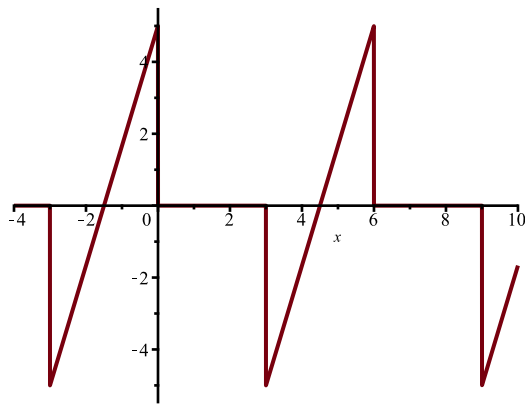
$$f_{\text{per}} := x \mapsto \text{make_periodic}(f(x), x, -6, 6)$$



```
> f:=x->piecewise(x>-3 and x<0, 10/3*(x+3/2), x>0 and x<3, 0);
f_per:=x->make_periodic(f(x),x,-3,3);
plot(f_per(x), x=-4..10, view=[-4..10, -5.5..5.5], scaling=constrained)
```

$$f := x \mapsto \begin{cases} \frac{10 \cdot x}{3} + 5 & -3 < x < 0 \\ 0 & 0 < x < 3 \end{cases}$$

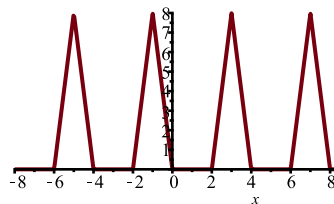
$$f_{\text{per}} := x \mapsto \text{make_periodic}(f(x), x, -3, 3)$$



```
> f:=x->piecewise(x>-2 and x<-1, 8*(x+3/2)+4, x>-1 and x<0, -8*x, x>0 and x<2, 0);
f_per:=x->make_periodic(f(x),x,-2,2);
plot(f_per(x), x=-8..8.5,view=[-8..8.5,0..8],scaling=constrained)
```

$$f := x \mapsto \begin{cases} 8 \cdot x + 16 & -2 < x < -1 \\ -8 \cdot x & -1 < x < 0 \\ 0 & 0 < x < 2 \end{cases}$$

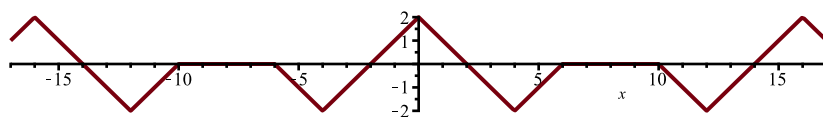
$$f_{\text{per}} := x \mapsto \text{make_periodic}(f(x), x, -2, 2)$$



```
> f:=x->piecewise(x>-8 and x<-6, 0,
x>-6 and x<-4, -6-x,
x>-4 and x<0, 2+x,
x>0 and x<4, 2-x,
x>4 and x<6, -6+x,
x>6 and x<8, 0);
f_per:=x->make_periodic(f(x),x,-8,8);
plot(f_per(x), x=-17..17,view=[-17..17,-2..2],scaling=constrained)
```

$$f := x \mapsto \begin{cases} 0 & -8 < x < -6 \\ -6 - x & -6 < x < -4 \\ x + 2 & -4 < x < 0 \\ 2 - x & 0 < x < 4 \\ -6 + x & 4 < x < 6 \\ 0 & 6 < x < 8 \end{cases}$$

$$f_{\text{per}} := x \mapsto \text{make_periodic}(f(x), x, -8, 8)$$



```
> f:=x->piecewise(t>-Pi and t<Pi, cos(t/2));
f_per:=x->make_periodic(f(t),t,-Pi,Pi);
plot(f_per(t), t=-10/3*Pi..10/3*Pi)
```

$$f := x \mapsto \begin{cases} \cos\left(\frac{t}{2}\right) & -\pi < t < \pi \end{cases}$$

$$f_{\text{per}} := x \mapsto \text{make_periodic}(f(t), t, -\pi, \pi)$$

