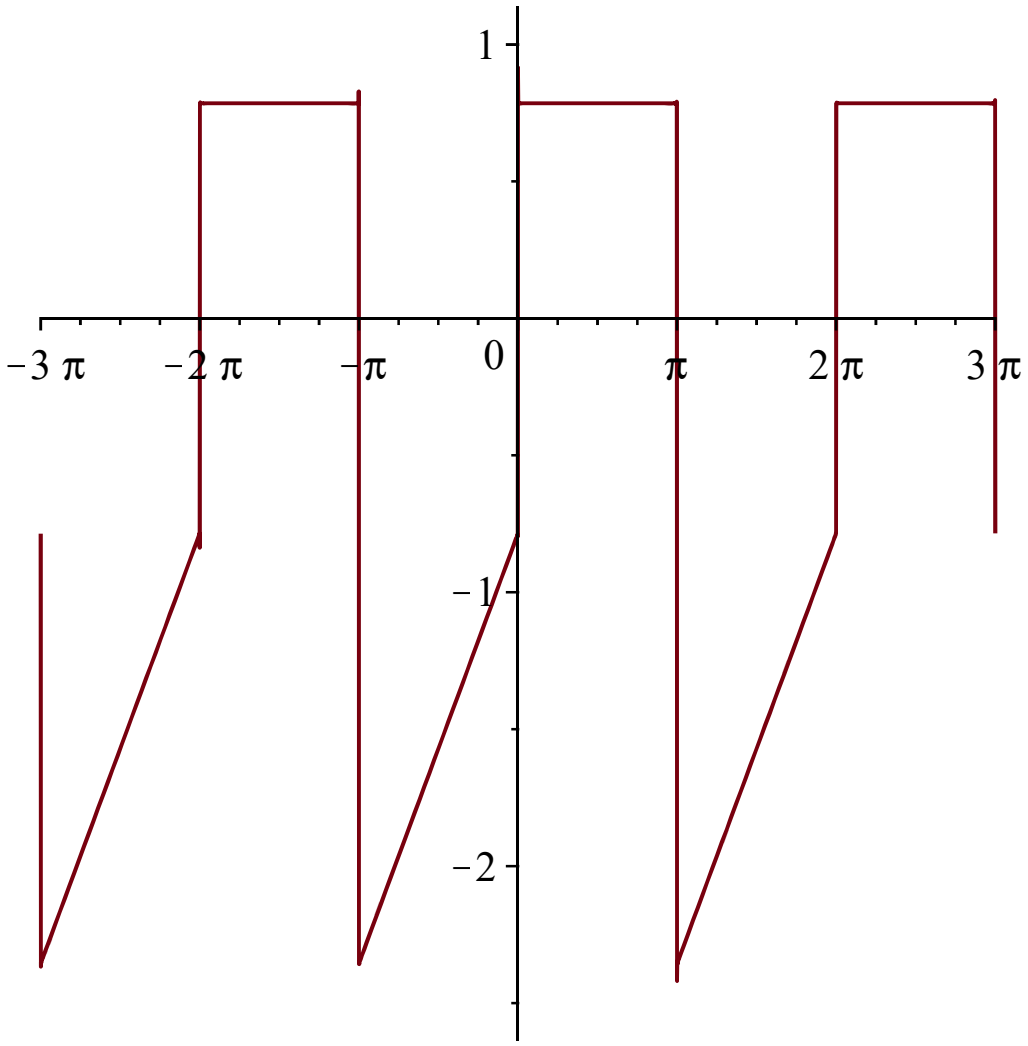
```
> #Лабораторная номер 2 Тимофеев Вариант 6
  #Задание 1
  with(plots):
> fourierseries := proc(f, x1, x2, interval) local n, l,

  a, b, s, d,, count, i, m;

  l := (x2-x1)/2;

  a[0] := int(f, x=x1..x2)/l;

  a[n] := int(f*cos(n*Pi*x/l), x=x1..x2)/l;

  b[n] := int(f*sin(n*Pi*x/l), x=x1..x2)/l;
  S[k] := a[0]/2 + sum(a[n]*cos(n*Pi*x/l) + b[n]*sin(n*Pi*x/l), n=1..k);
  m := 0;
  count := 60;
  for i from 0 to count do
  d[i] := plot(unapply(a[0]/2 + sum(a[n]*cos(n*Pi*x/l) + b[n]*sin(n*Pi*x/l), n=1
      ..m), x), interval);
  m := m + 1 + m/7;
  end do:

  return display(seq(display(d[y]), y=0..count), insequence=true);
  end proc;

  coeffq := proc(f, x1, x2) local n, l, a, b;
  l := (x2-x1)/2;

  a[0] := int(f, x=x1..x2)/l;

  a[n] := int(f*cos(n*Pi*x/l), x=x1..x2)/l;

  b[n] := int(f*sin(n*Pi*x/l), x=x1..x2)/l;

  return [a[0], a[n], b[n]];
  end proc;

fourierseries := proc(f, x1, x2, interval)
    local n, l, a, b, s, d, S, count, i, m;
    l := 1/2*x2 - 1/2*x1;
    a[0] := int(f, x=x1..x2)/l;
    a[n] := int(f*cos(n*π*x/l), x=x1..x2)/l;
    b[n] := int(f*sin(n*π*x/l), x=x1..x2)/l;
    S[k] := 1/2*a[0] + sum(a[n]*cos(n*π*x/l) + b[n]*sin(n*π*x/l), n=1..k);
```

```
    m := 0;
    count := 60;
    for i from 0 to count do
        d[i] := plot(unapply(1/2*a[0]+sum(a[n]*cos(n*π*x/l)+b[n]*sin(n*π*x
        /l),n=1..m),x),interval);
        m := 8/7*m+1
    end do;
    return plots:-display(seq(plots:-display(d[y]),y=0..count),insequence=true)
end proc
coeffq := proc(f,x1,x2)                                                    (1)
    local n,l,a,b;
    l := 1/2*x2-1/2*x1;
    a[0] := int(f,x=x1..x2)/l;
    a[n] := int(f*cos(n*π*x/l),x=x1..x2)/l;
    b[n] := int(f*sin(n*π*x/l),x=x1..x2)/l;
    return [a[0],a[n],b[n]]
end proc
```

```
> expr := piecewise(-Pi ≤ x < 0, x/2 - Pi/4, 0 ≤ x < Pi, Pi/4):
  fourierseries(expr,-Pi,Pi,-3·Pi..3·Pi);
```

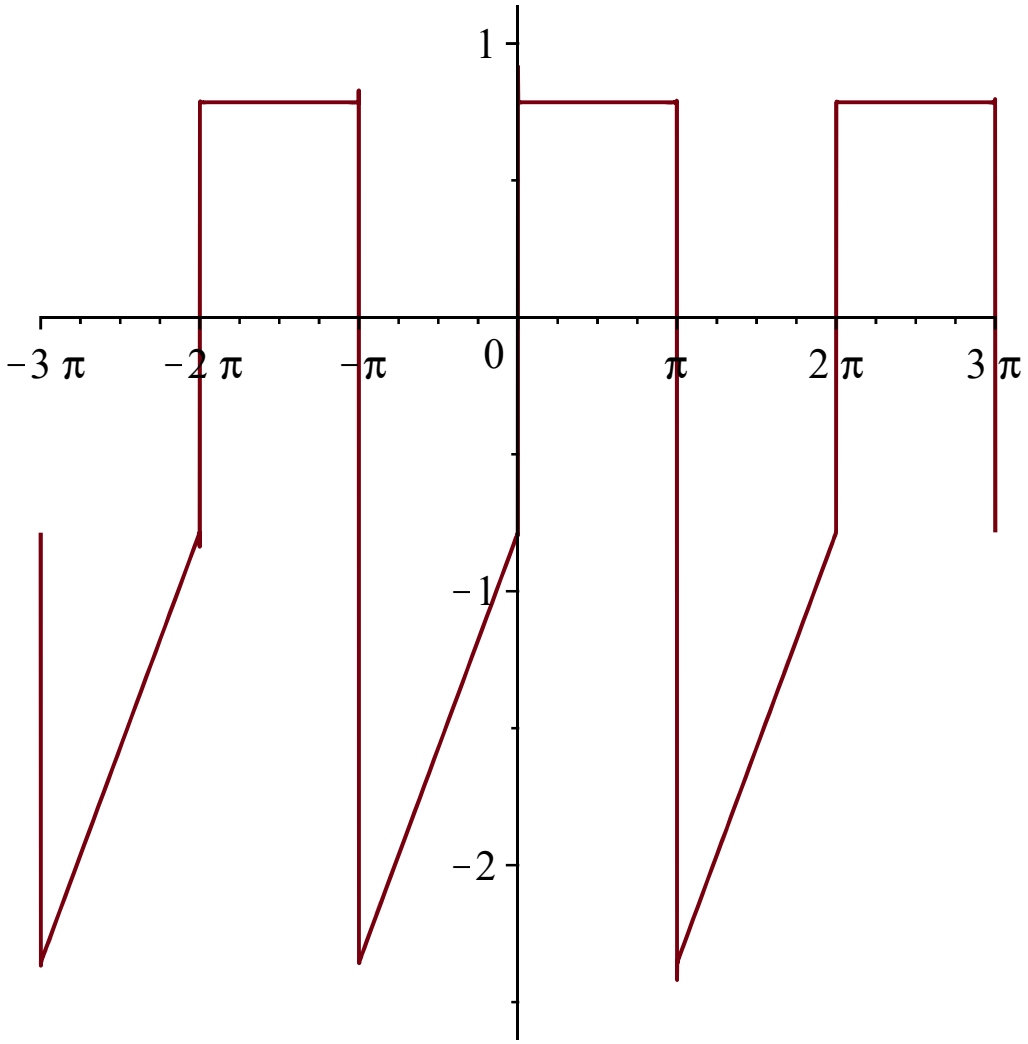



```
> customplot := proc(a0, an, bn, l, N, interval) local i, d, m, count;
  m := 0;
  count := 60;
  i := 0;
  while(i ≤ count and m ≤ N) do
  d[i] := plot(unapply(a0/2 + sum(an * cos(n * Pi * x/l) + bn * sin(n * Pi * x/l), n = 1..m),
      x), interval);
  m := m + 1 + m/7;
  i := i + 1;
   end do;

  return display(seq(display(d[y]), y = 0..i − 1), insequence = true);

  end proc;
```

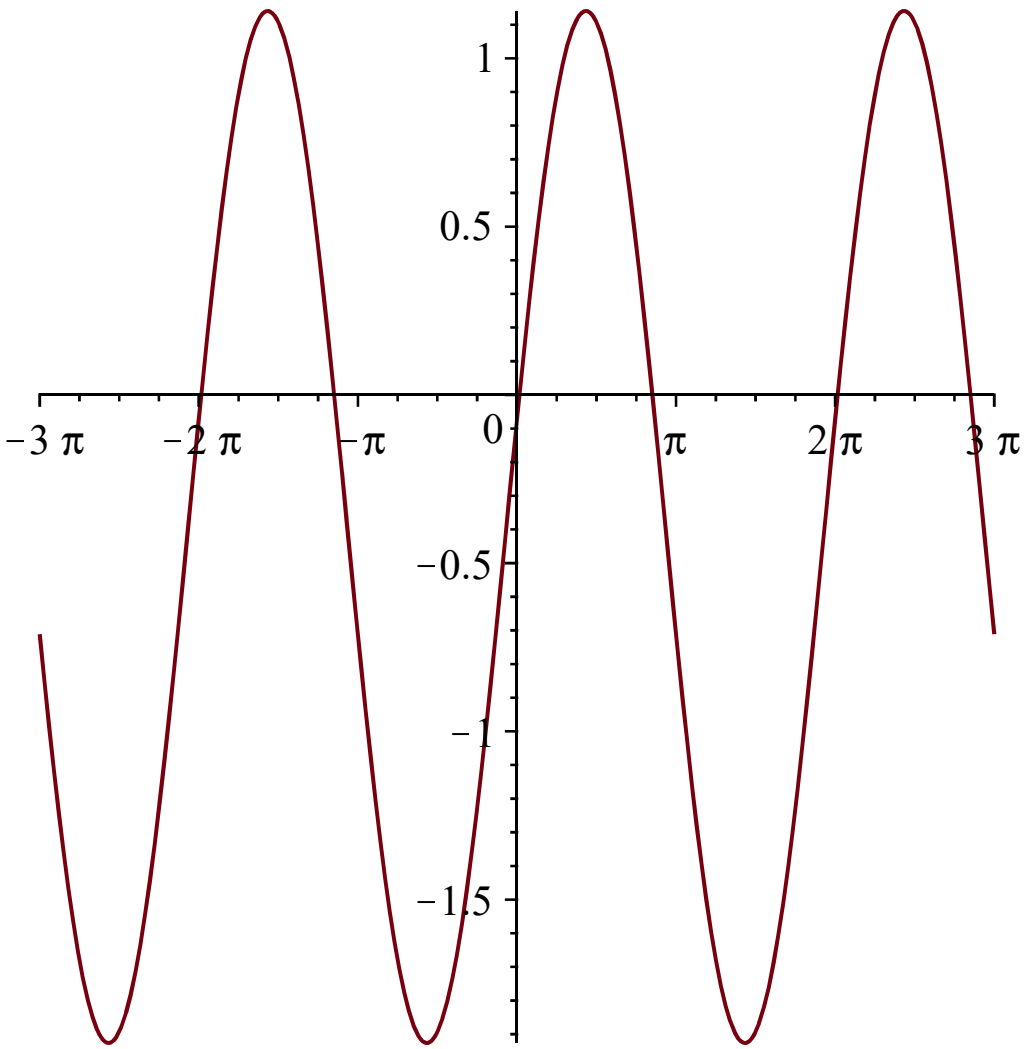
```
customplot := proc(a0, an, bn, l, N, interval)                    (2)
   local i, d, m, count;
   m := 0;
```

```
    count := 60;
    i := 0;
    while i <= count and m <= N do
        d[i] := plot(unapply(1/2*a0 + sum(an*cos(n*π*x/l) + bn*sin(n*π*x/l), n
        = 1..m), x), interval);
        m := 8/7*m + 1;
        i := i + 1
    end do;
    return plots:-display(seq(plots:-display(d[y]), y = 0..i - 1), insequence = true)
end proc
```

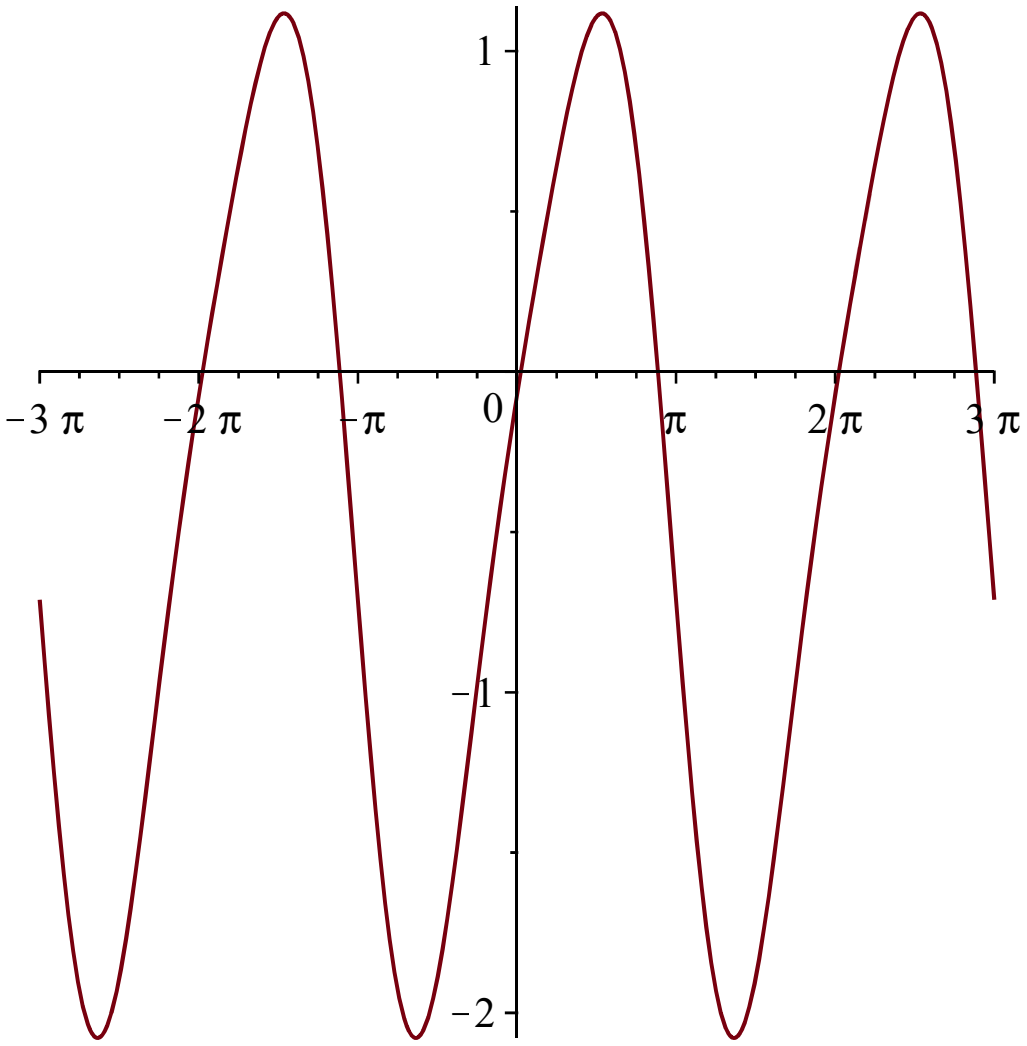
```
> customplot(-Pi/4, (1 - (-1)^n)/(2*Pi*n^2), (1 - 2*(-1)^n)/(2*n), Pi, 100000, -3*Pi..3*Pi);
```



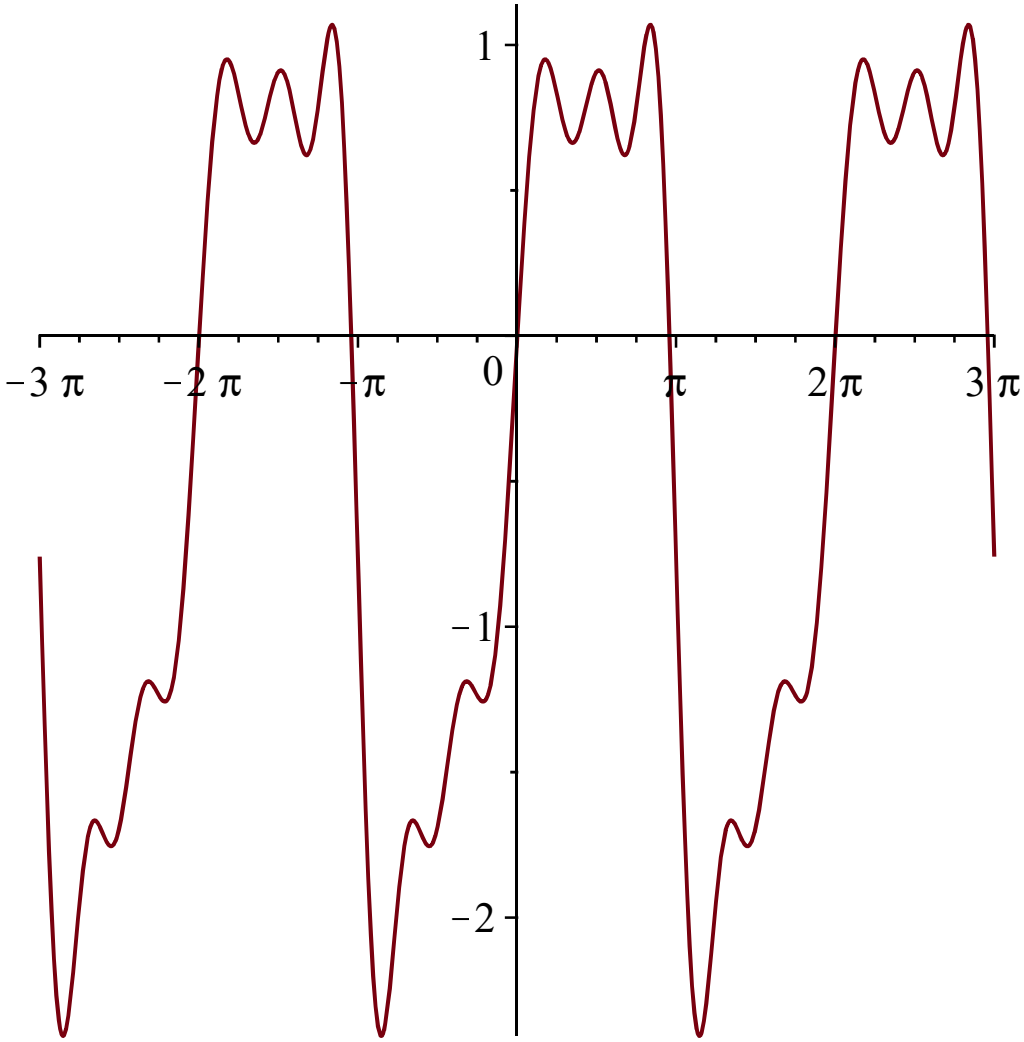

```
> customplot(-Pi/4, (1 - (-1)^n)/(2*Pi*n^2), (1 - 2*(-1)^n)/(2*n), Pi, 1, -3*Pi..3*Pi);
```




```
> customplot( -Pi/4, (1-(-1)^n)/(2*Pi*n^2), (1-2*(-1)^n)/(2*n), Pi, 3, -3*Pi..3*Pi );
```



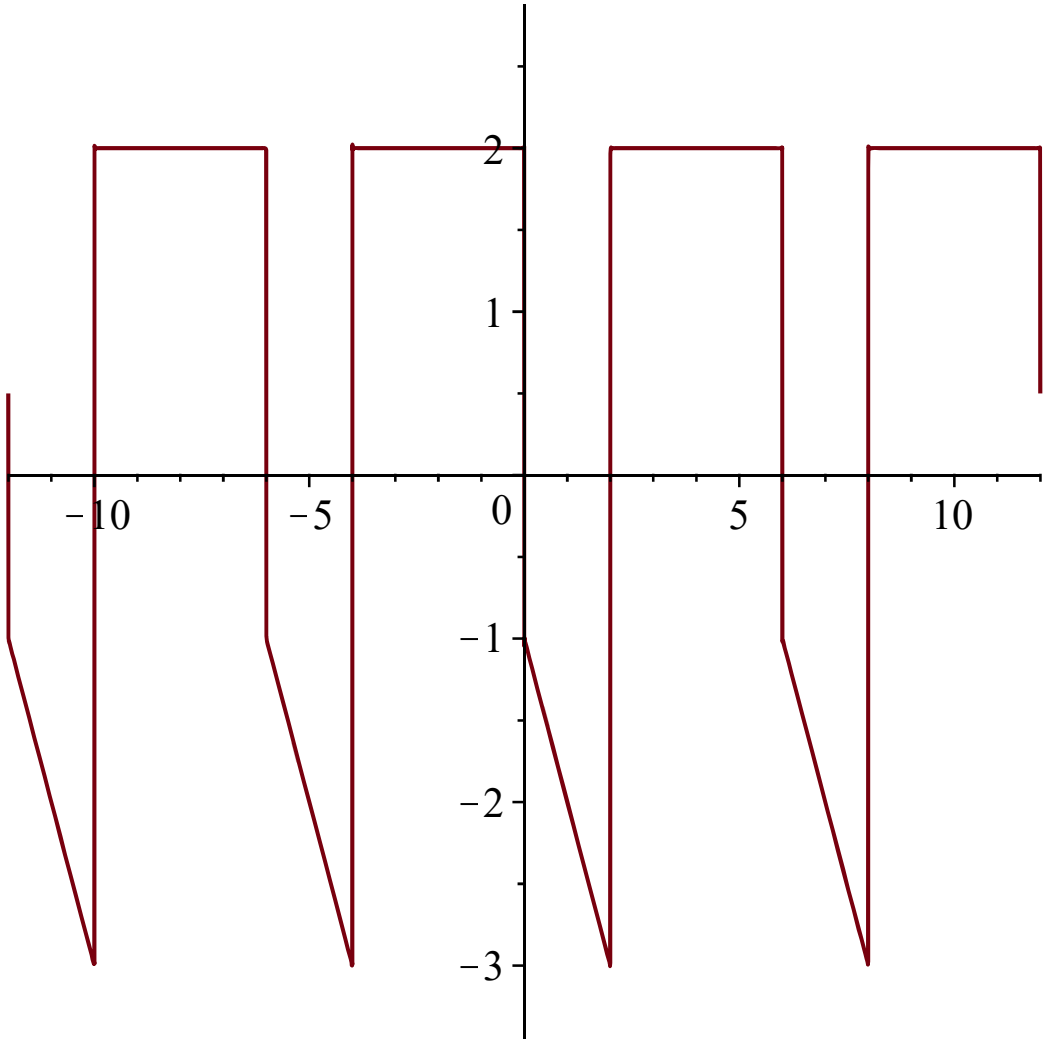

```
> customplot( -Pi/4, (1-(-1)^n)/(2*Pi*n^2), (1-2*(-1)^n)/(2*n), Pi, 7, -3*Pi..3*Pi );
```




```
> expr2 := piecewise(0 < x < 2, -x - 1, 2 ≤ x ≤ 6, 2);
```

$$expr2 := \begin{cases} -x-1 & 0 < x < 2 \\ 2 & 2 \le x \le 6 \end{cases} \quad (3)$$

```
> fourierseries(expr2, 0, 6, -12..12);
```



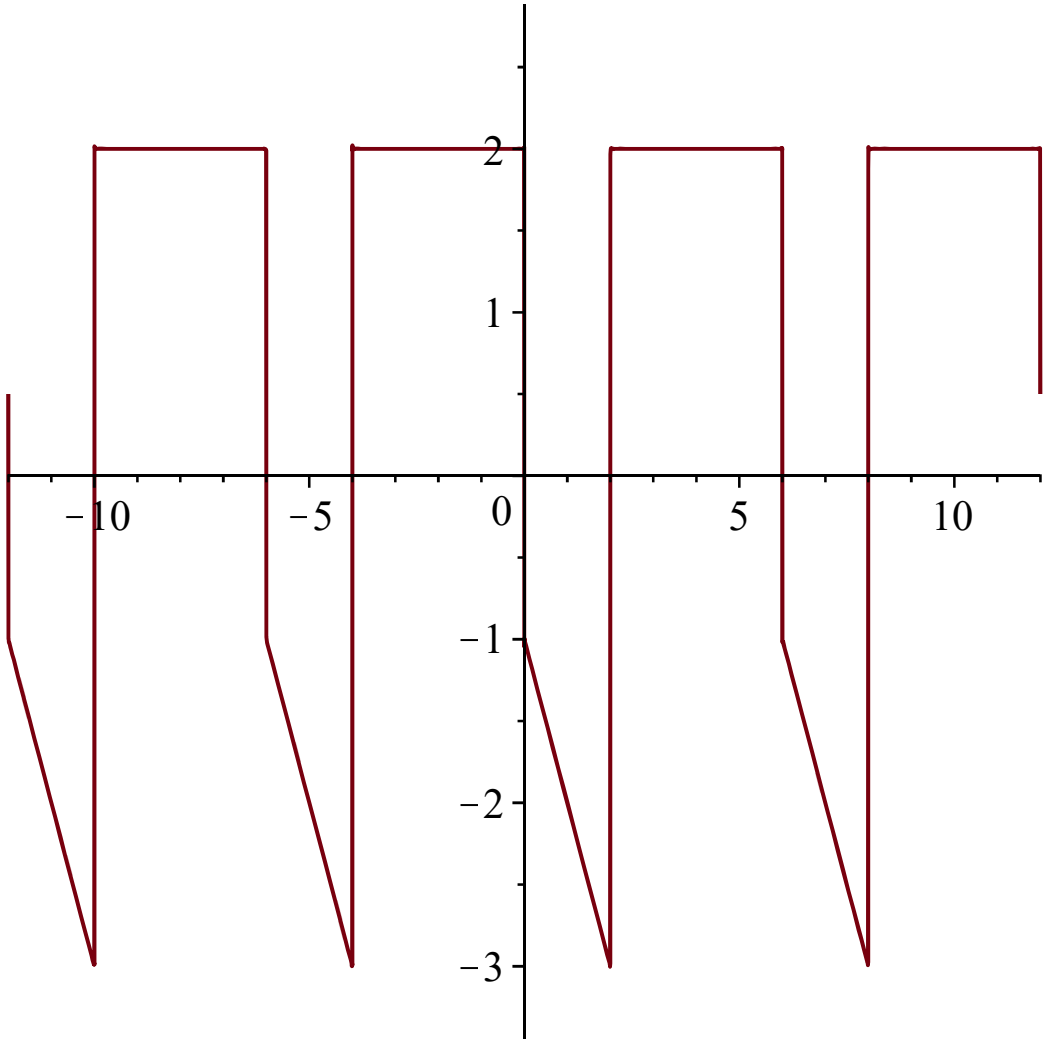

```
>
```

```
> coeffq(expr2, 0, 6);
```

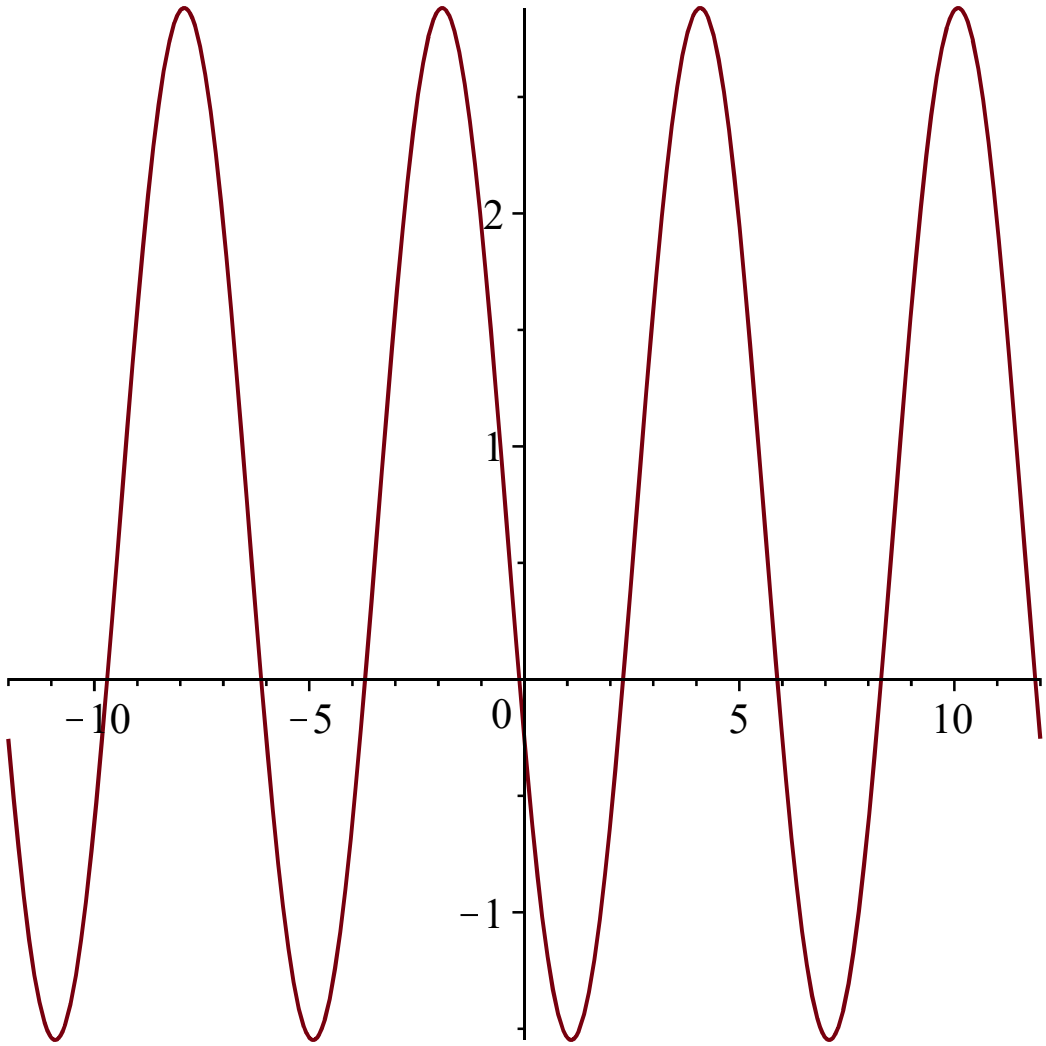
$$\left[\frac{4}{3}, -\frac{3\left(\pi n \sin\left(\frac{2\pi n}{3}\right)+\cos\left(\frac{2\pi n}{3}\right)-1\right)}{\pi^2 n^2} + \frac{2\left(2\sin(\pi n)\cos(\pi n)-\sin\left(\frac{2\pi n}{3}\right)\right)}{\pi n}, \frac{3\pi n\cos\left(\frac{2\pi n}{3}\right)-\pi n-3\sin\left(\frac{2\pi n}{3}\right)}{\pi^2 n^2} - \frac{2\left(2\cos(\pi n)^2-\cos\left(\frac{2\pi n}{3}\right)-1\right)}{\pi n}\right] \quad (4)$$

```
> customplot( 4/3, 1/(Pi·n)·( -5·sin( 2·Pi·n/3 ) + 3/(Pi·n) - 3·cos( 2·Pi·n/3 )/(Pi·n) ), 1/(Pi·n)·(
```

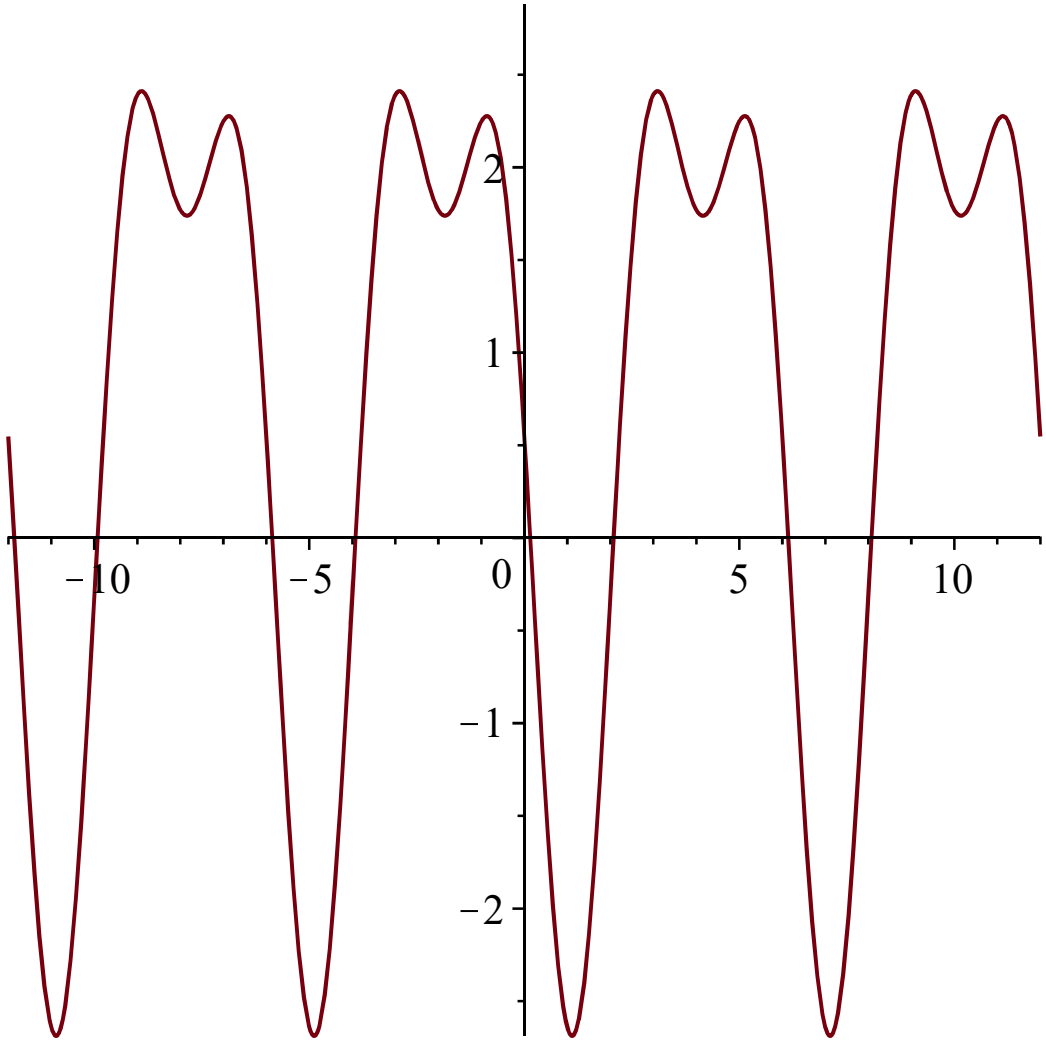
$$-\frac{\sin\left(\frac{2\cdot \mathrm{Pi}\cdot n}{3}\right)}{\frac{\mathrm{Pi}\cdot n}{3}}+5\cdot\cos\left(\frac{2\cdot \mathrm{Pi}\cdot n}{3}\right)-3\Bigg],\ 3,\ 100000,\ -12\ ..12\Bigg];$$



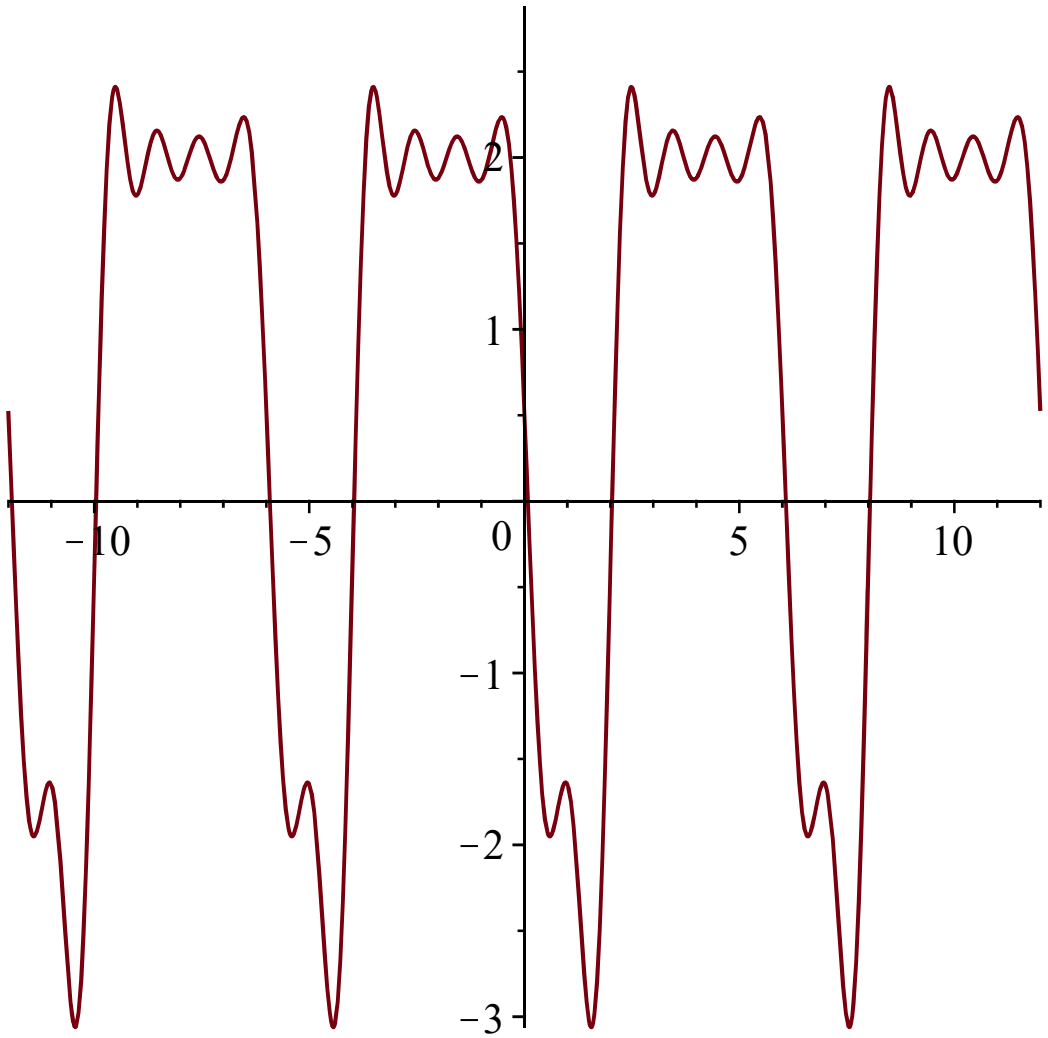
> $$customplot\left(\left[\frac{4}{3},\ \frac{1}{\mathrm{Pi}\cdot n}\cdot\left(-5\cdot\sin\left(\frac{2\cdot \mathrm{Pi}\cdot n}{3}\right)+\frac{3}{\mathrm{Pi}\cdot n}-\frac{3\cdot\cos\left(\frac{2\cdot \mathrm{Pi}\cdot n}{3}\right)}{\mathrm{Pi}\cdot n}\right),\ \frac{1}{\mathrm{Pi}\cdot n}\cdot\left(\right.\right.\right.$$
$$\left.\left.\left.-\frac{\sin\left(\frac{2\cdot \mathrm{Pi}\cdot n}{3}\right)}{\frac{\mathrm{Pi}\cdot n}{3}}+5\cdot\cos\left(\frac{2\cdot \mathrm{Pi}\cdot n}{3}\right)-3\right],\ 3,\ 1,\ -12\ ..12\right];$$



$$> \mathit{customplot}\left(\frac{4}{3}, \frac{1}{\mathrm{Pi}\cdot n}\cdot\left(-5\cdot\sin\left(\frac{2\cdot\mathrm{Pi}\cdot n}{3} \right) + \frac{3}{\mathrm{Pi}\cdot n} - \frac{3\cdot\cos\left(\frac{2\cdot\mathrm{Pi}\cdot n}{3} \right)}{\mathrm{Pi}\cdot n} \right), \frac{1}{\mathrm{Pi}\cdot n}\cdot\left(- \frac{\sin\left(\frac{2\cdot\mathrm{Pi}\cdot n}{3} \right)}{\frac{\mathrm{Pi}\cdot n}{3}} + 5\cdot\cos\left(\frac{2\cdot\mathrm{Pi}\cdot n}{3} \right) - 3 \right), 3, 3, -12..12 \right);$$



$$> \mathit{customplot}\left(\frac{4}{3}, \frac{1}{\mathrm{Pi}\cdot n}\cdot\left(-5\cdot\sin\left(\frac{2\cdot\mathrm{Pi}\cdot n}{3} \right) + \frac{3}{\mathrm{Pi}\cdot n} - \frac{3\cdot\cos\left(\frac{2\cdot\mathrm{Pi}\cdot n}{3} \right)}{\mathrm{Pi}\cdot n} \right), \frac{1}{\mathrm{Pi}\cdot n}\cdot\left(- \frac{\sin\left(\frac{2\cdot\mathrm{Pi}\cdot n}{3} \right)}{\frac{\mathrm{Pi}\cdot n}{3}} + 5\cdot\cos\left(\frac{2\cdot\mathrm{Pi}\cdot n}{3} \right) - 3 \right), 3, 7, -12..12 \right);$$




```
> #Задание 3
  # а)на полном периоде
> expr := piecewise(0 < x < 2, -2·(x-1)^2, 2 ≤ x ≤ 4, x-4):
> coeffq(expr, 0, 4);
```

$$\left[-\frac{5}{3},\ -\frac{2\left(n^2\pi^2\sin(n\pi)+4n\pi\cos(n\pi)+4n\pi-8\sin(n\pi)\right)}{n^3\pi^3}\right.$$

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

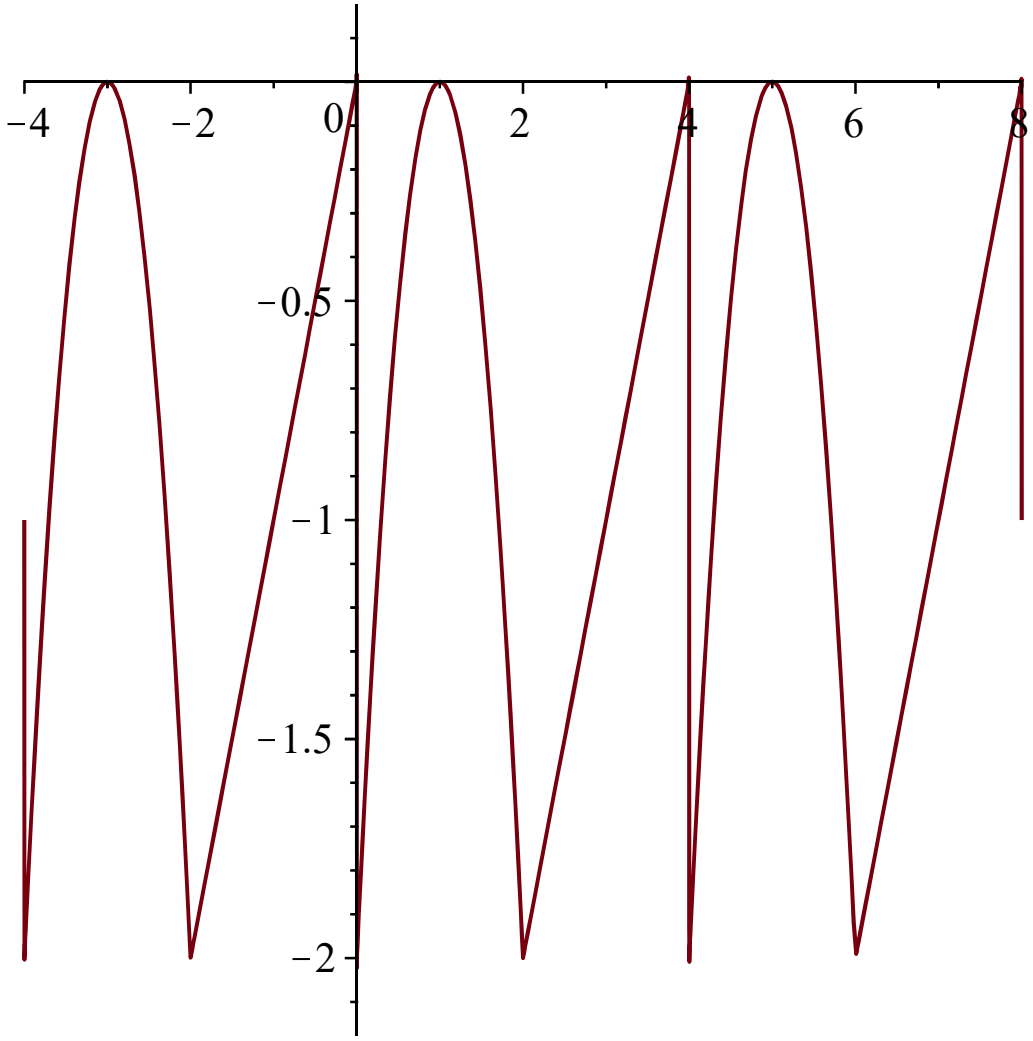
$$\frac{2\left(n^2\pi^2\cos(n\pi)-n^2\pi^2-4n\pi\sin(n\pi)-8\cos(n\pi)+8\right)}{n^3\pi^3}$$

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

(5)

```
> customplot(-5/3, (-2·(5·(-1)^n+3))/(Pi^2·n^2), ((-1)^n-1)·(2/(Pi·n) - 16/(Pi·n)^3) - (2·(-1)^n)/(Pi·n), 2,
```

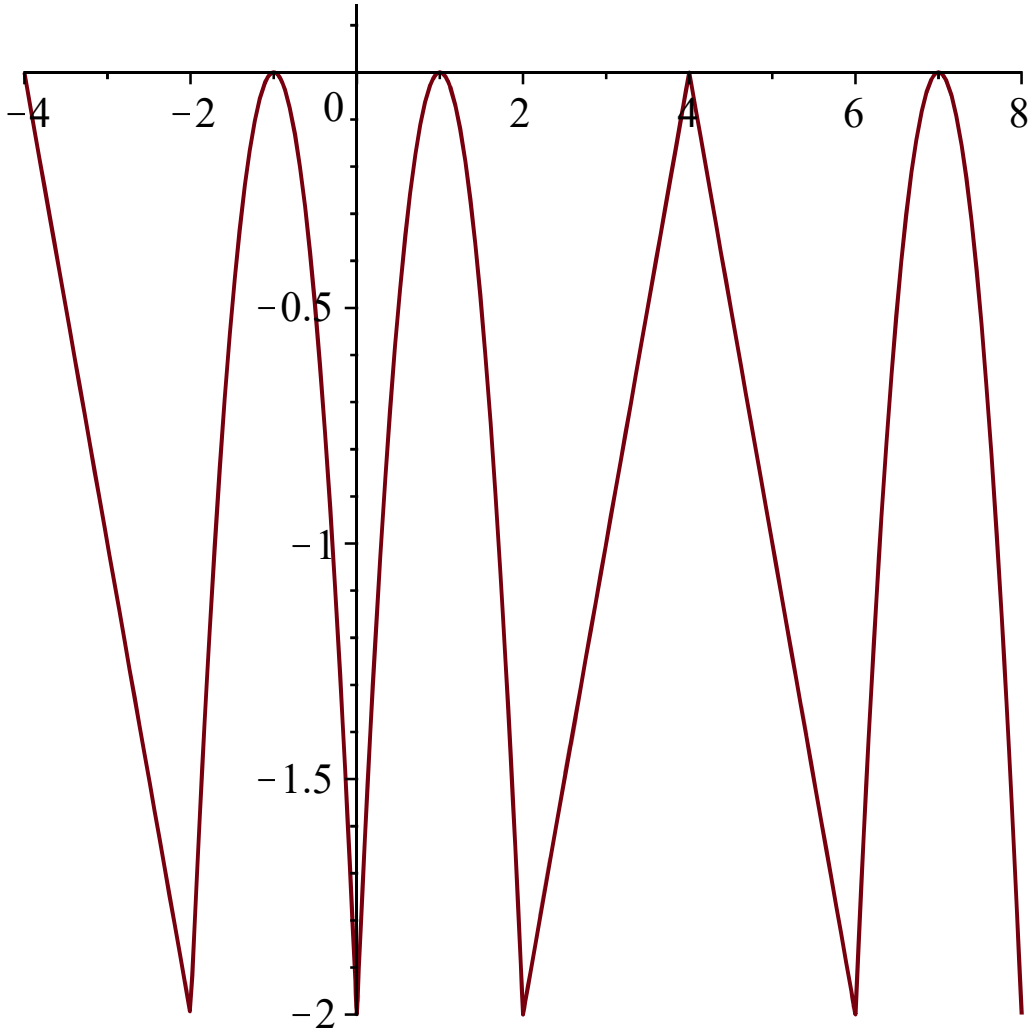
$$10000, -4..8\Big);$$



> *#б) на полупериоде (четная)*

$$customplot\left(-\frac{5}{3}, \frac{1}{2}\cdot\left(\frac{4\cdot\sin\left(\frac{Pi\cdot n}{2}\right)}{\left(\frac{Pi\cdot n}{4}\right)^3} - \frac{5\cdot\cos\left(\frac{Pi\cdot n}{2}\right)}{\left(\frac{Pi\cdot n}{4}\right)^2} + \frac{(-1)^n}{\left(\frac{Pi\cdot n}{4}\right)^2} - \frac{4}{\left(\frac{Pi\cdot n}{4}\right)^2}\right), 0, 4,$$

$$10000, -4..8\Big);$$

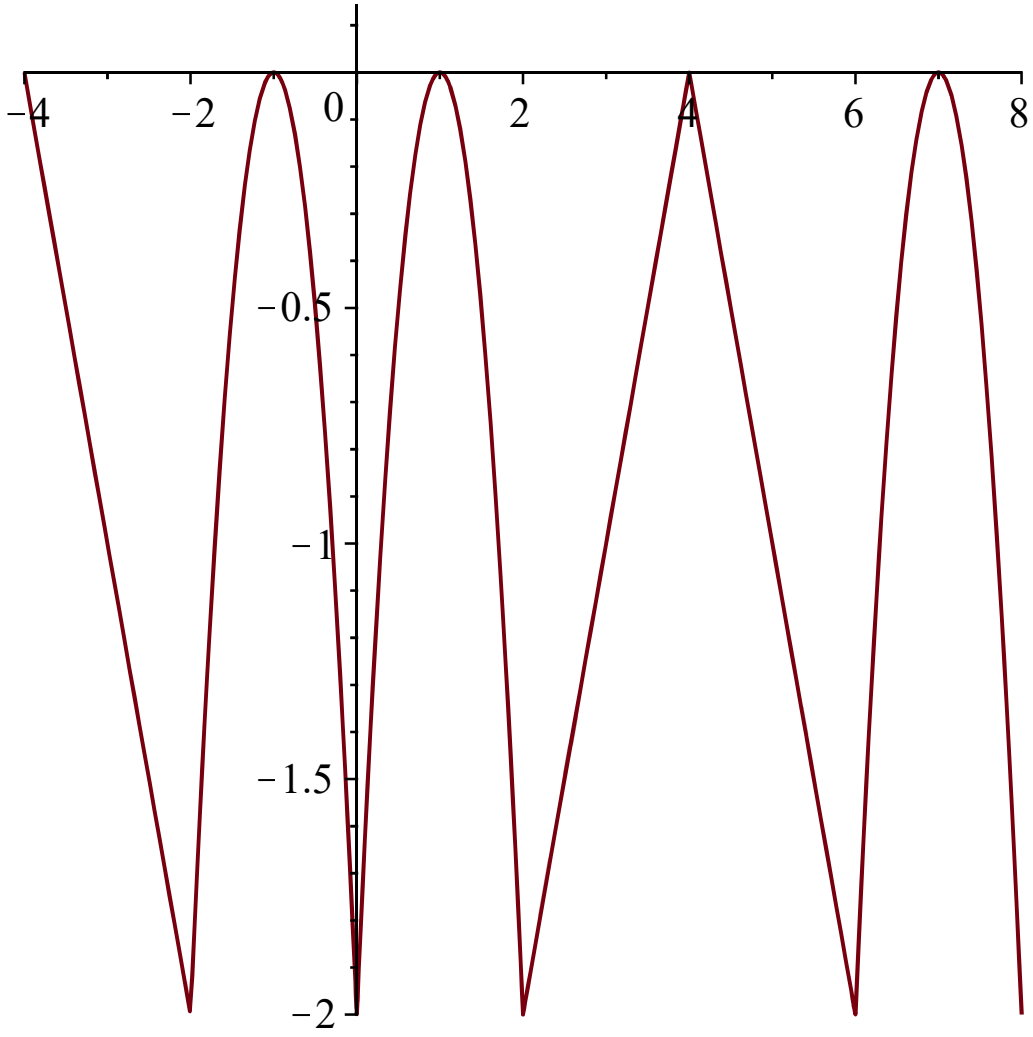


> $expr3b := piecewise(-4 \le x \le -2, -x-4,\ -2 < x < 0, -2\cdot(x+1)^2, 0 < x < 2, -2\cdot(x-1)^2, 2 \le x \le 4, x-4);$
> $coeffq(expr3b, -4, 4);$

$$expr3b := \begin{cases} -x-4 & -4 \le x \le -2 \\ -2\,(x+1)^2 & -2 < x < 0 \\ -2\,(x-1)^2 & 0 < x < 2 \\ x-4 & 2 \le x \le 4 \end{cases}$$

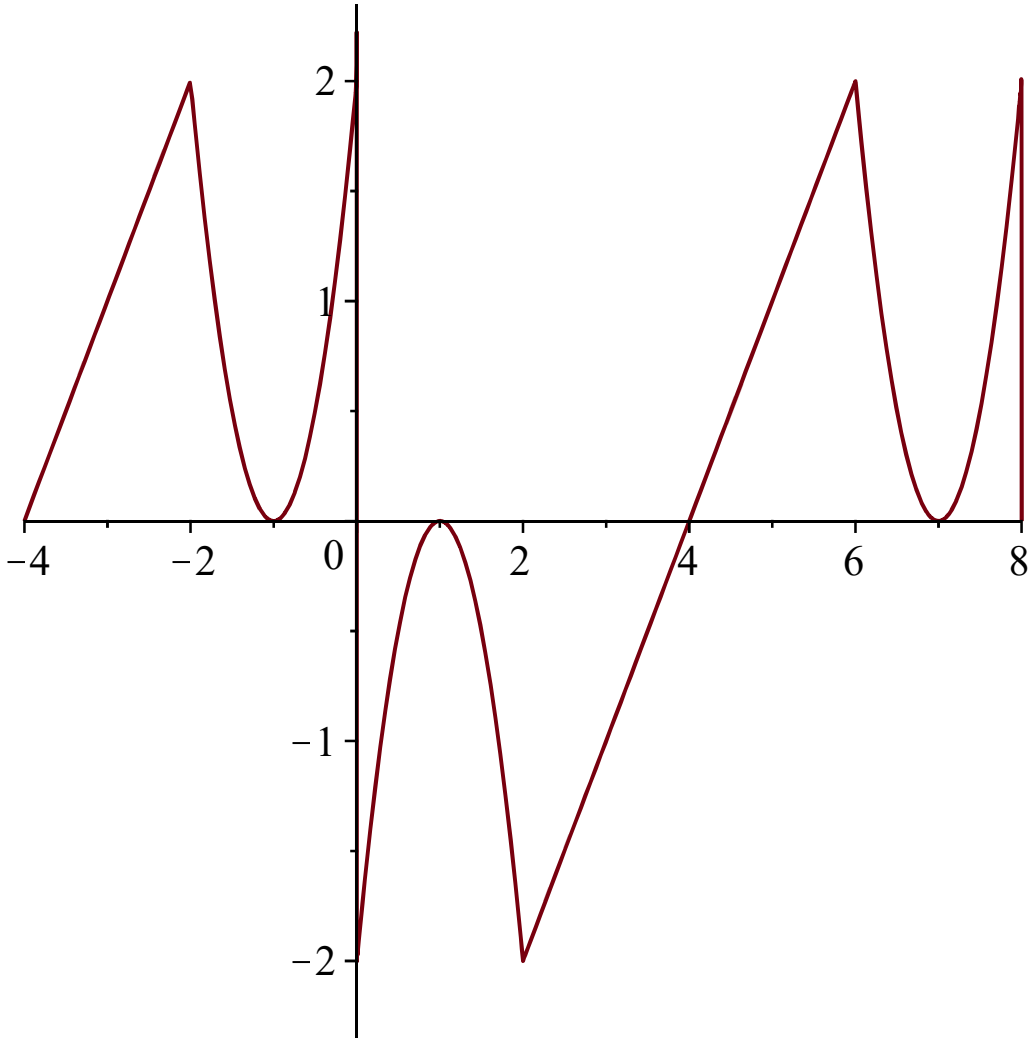
$$\left[-\frac{5}{3}, \frac{4\left(n\,\pi \sin\left(\frac{n\,\pi}{2}\right) + 2\cos(n\,\pi) - 2\cos\left(\frac{n\,\pi}{2}\right)\right)}{n^2\,\pi^2}, -\frac{4\left(n^2\,\pi^2 \sin\left(\frac{n\,\pi}{2}\right) + 8\,n\,\pi\cos\left(\frac{n\,\pi}{2}\right) + 8\,n\,\pi - 32\sin\left(\frac{n\,\pi}{2}\right)\right)}{n^3\,\pi^3}, 0\right] \quad \textbf{(6)}$$

> $fourierseries(expr3b, -4, 4, -4..8);$



> *#в)На полупериоде (нечентная)*

$$customplot\left(0,\ 0,\ \frac{1}{2}\cdot\left(-\frac{5\cdot\sin\left(\frac{\mathrm{Pi}\cdot n}{2}\right)}{\left(\frac{\mathrm{Pi}\cdot n}{4}\right)^{2}}-\frac{4\cdot\cos\left(\frac{\mathrm{Pi}\cdot n}{2}\right)}{\left(\frac{\mathrm{Pi}\cdot n}{4}\right)^{3}}-\frac{2}{\left(\frac{\mathrm{Pi}\cdot n}{4}\right)}+\frac{4}{\left(\frac{\mathrm{Pi}\cdot n}{4}\right)^{3}}\right),\ 4,\ 10000,\ -4\ldots 8\right);$$




```
> #Задание 4
  #Функция для ряда с многочленами Чебышева
  with(orthopoly);
  cheb := proc(f, count) local c, m, i, d;
 T[0] := 1;
  T[1] := x;
  for i from 0 to count do

  T[i+2] := 2 ·x·T[i+1] − T[i] :
  #T[i] = cos(n·arccos(x));
  T[i+2] := simplify(T[i+2]);
  c[i] := int( f·T[i] / sqrt(1 − x^2), x = -1..1 );
  normf[i] := int( T[i]·T[i] / sqrt(1 − x^2), x = -1..1 ) :
  end do:
 return add( c[n]·T[n] / normf[n], n = 0..count )

 end proc;
```

```
Warning, `T` is implicitly declared local to procedure `cheb`
Warning, `normf` is implicitly declared local to procedure
`cheb`
```

$$[G, H, L, P, T, U]$$

```
Warning, `T` is implicitly declared local to procedure `cheb`
Warning, `normf` is implicitly declared local to procedure
`cheb`
```

```
cheb := proc(f, count)                                                (7)
    local c, m, i, d, T, normf;
    T[0] := 1;
    T[1] := x;
    for i from 0 to count do
        T[i+2] := 2*x*T[i+1] - T[i];
        T[i+2] := simplify(T[i+2]);
        c[i] := int(f*T[i]/sqrt(-x^2+1), x = -1..1);
        normf[i] := int(T[i]*T[i]/sqrt(-x^2+1), x = -1..1)
    end do;
    return add(c[n]*T[n]/normf[n], n = 0..count)
end proc
```

```
> lej := proc(f, count)
    Pn[0] := 1;
    for i from 0 to count do
```

$$Pn[i+1] := \frac{diff\left((x^2-1)^{i+1}, x\$(i+1)\right)}{2^{i+1}\cdot(i+1)!};$$

```
    c[i] := int(f·Pn[i], x = -1..1);
    normf[i] := int(Pn[i]·Pn[i], x = -1..1);
    end do;
```

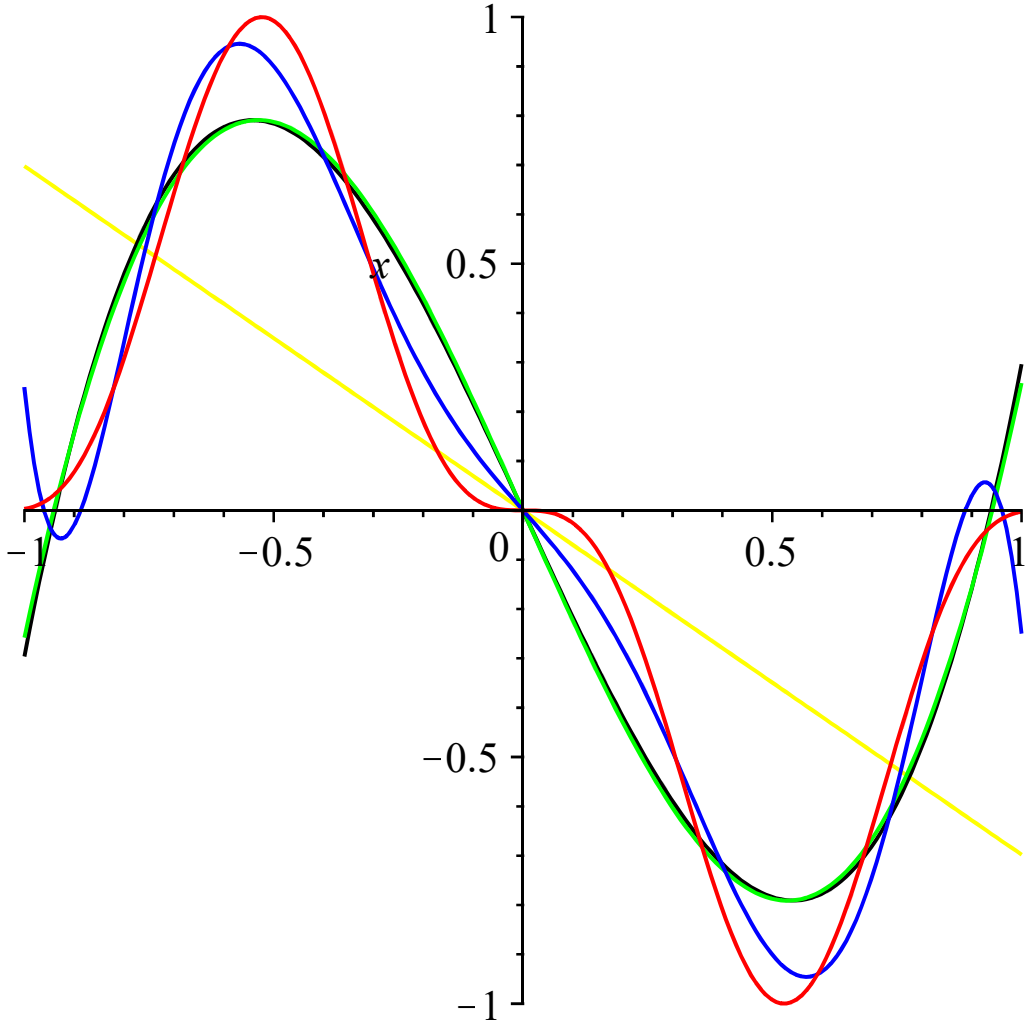
$$\textbf{return } unapply\left(add\left(\frac{c[n]\cdot Pn[n]}{normf[n]}, n = 0..count\right), x\right), -1..1;$$

```
    end proc;
Warning, `Pn` is implicitly declared local to procedure `lej`
Warning, `i` is implicitly declared local to procedure `lej`
Warning, `c` is implicitly declared local to procedure `lej`
Warning, `normf` is implicitly declared local to procedure `lej`
lej := proc(f, count)                                                 (8)
    local Pn, i, c, normf;
    Pn[0] := 1;
    for i from 0 to count do
        Pn[i+1] := diff((x^2-1)^(i+1), x$i+1)/(2^(i+1)*factorial(i+1));
        c[i] := int(f*Pn[i], x = -1..1);
        normf[i] := int(Pn[i]*Pn[i], x = -1..1)
    end do;
    return unapply(add(c[n]*Pn[n]/normf[n], n = 0..count), x), -1..1
end proc
> with(orthopoly);
```

```
f := (sin(-3 x))^3;
d[1] := plot(lej(f, 1), x = -1 ..1, color = yellow) :
d[3] := plot(lej(f, 3), x = -1 ..1, color = black) :
d[5] := plot(lej(f, 5), x = -1 ..1, color = green) :
d[7] := plot(lej(f, 7), x = -1 ..1, color = blue) :
display([ d[1], d[3], d[5], d[7], plot(f, x = -1 ..1, color = red) ]);
```

$$[G, H, L, P, T, U]$$

$$f := -\sin(3x)^3$$



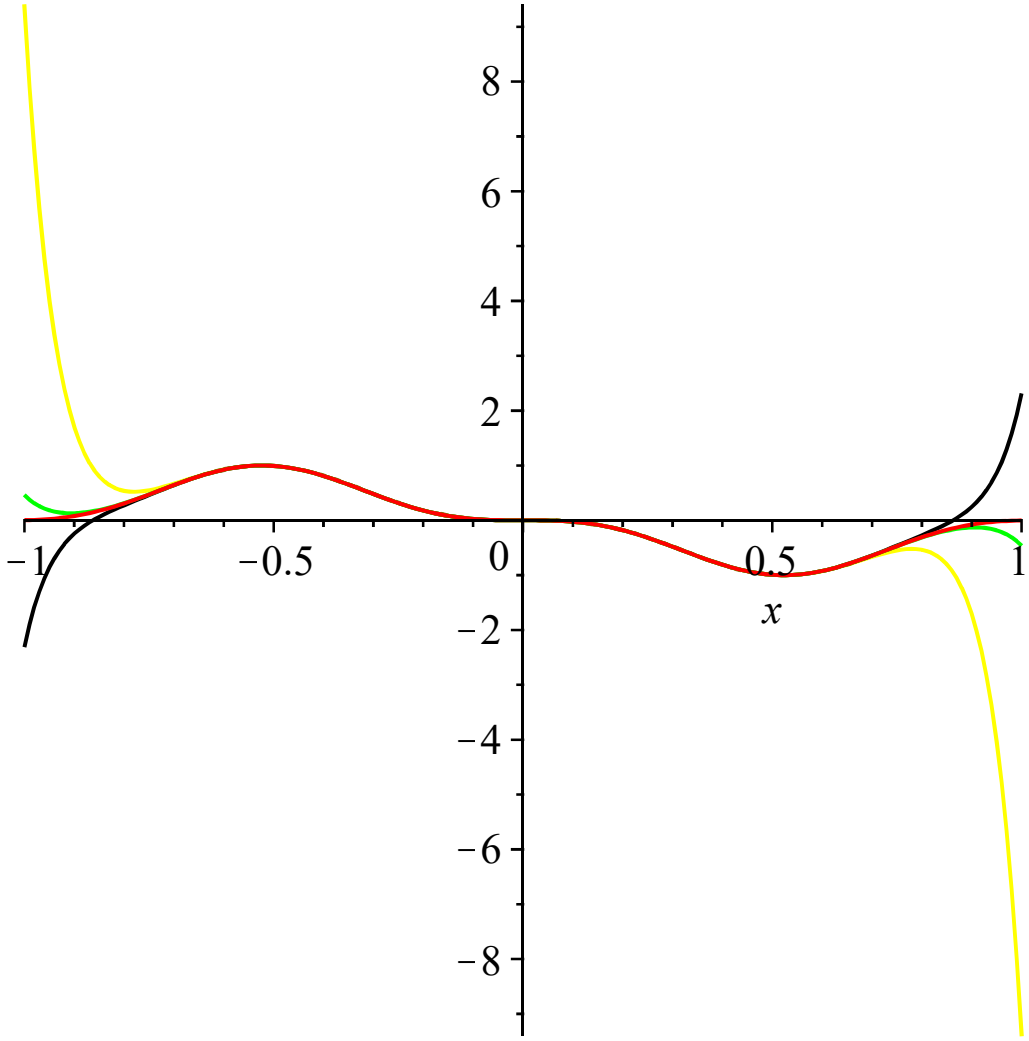

```
> Maclor := proc(f, count) local y, n;
  n := 0;
  for n from 1 to count do
  y[n] := (unapply(diff(f, x$n), x))(0)/n! * x^n;
  end do;
  y[0] := unapply(f, x)(0);
  return sum(y[n1], n1 = 0 ..count);
  end proc;
```

```
Maclor := proc(f, count)
  local y, n;
  n := 0;
```

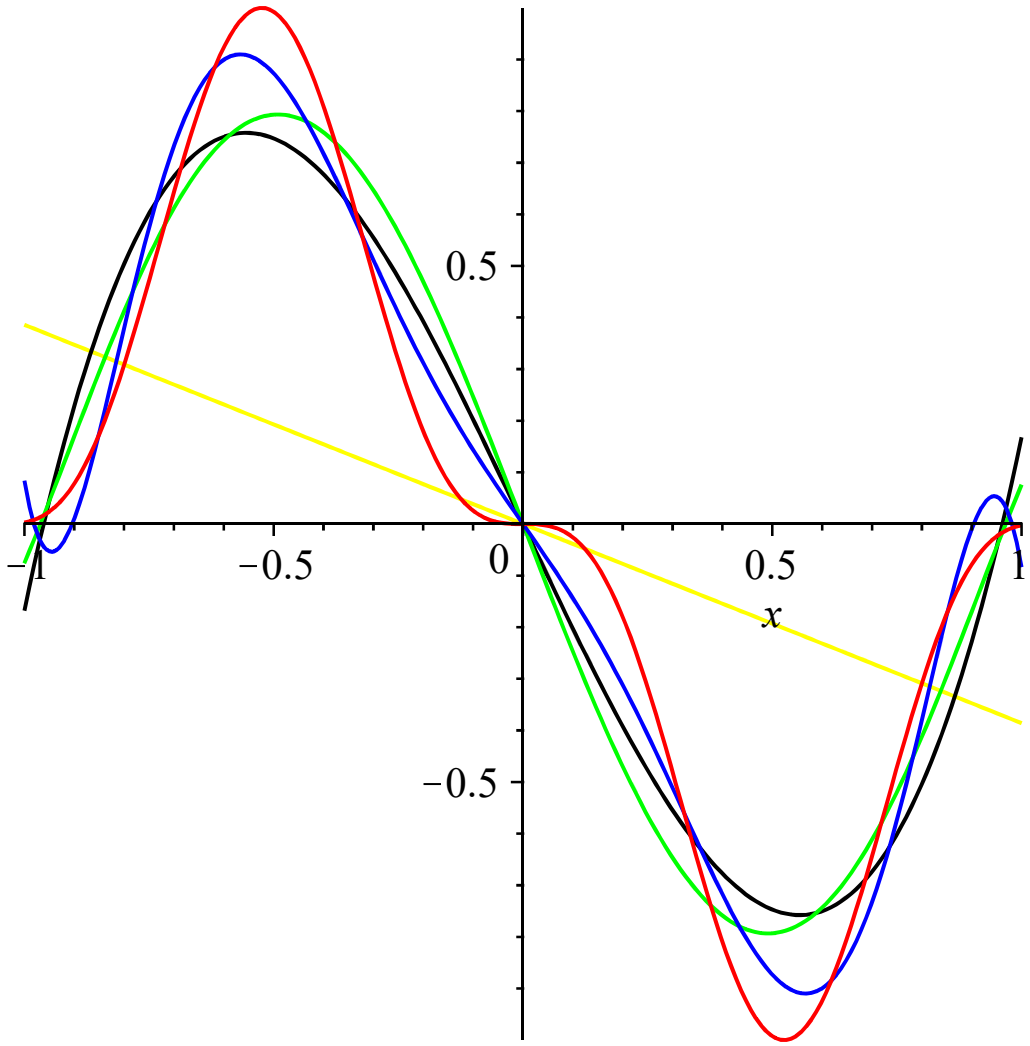
(9)

```
    for n to count do y[n] := unapply(diff(f, x$n), x)(0) * x^n / factorial(n) end do;
    y[0] := unapply(f, x)(0);
    return sum(y[n1], n1 = 0..count)
end proc
```

```
> d[1] := plot(Maclor(f, 15), x = -1..1, color = yellow):
  d[3] := plot(Maclor(f, 17), x = -1..1, color = black):
  d[5] := plot(Maclor(f, 20), x = -1..1, color = green):
  d[7] := plot(Maclor(f, 60), x = -1..1, color = blue):
  display([d[1], d[3], d[5], d[7], plot(f, x = -1..1, color = red)]);
```




```
> d[1] := plot(cheb(f, 2), x = -1..1, color = yellow):
  d[3] := plot(cheb(f, 4), x = -1..1, color = black):
  d[5] := plot(cheb(f, 6), x = -1..1, color = green):
  d[7] := plot(cheb(f, 8), x = -1..1, color = blue):
  display([d[1], d[3], d[5], d[7], plot(f, x = -1..1, color = red)]);
```

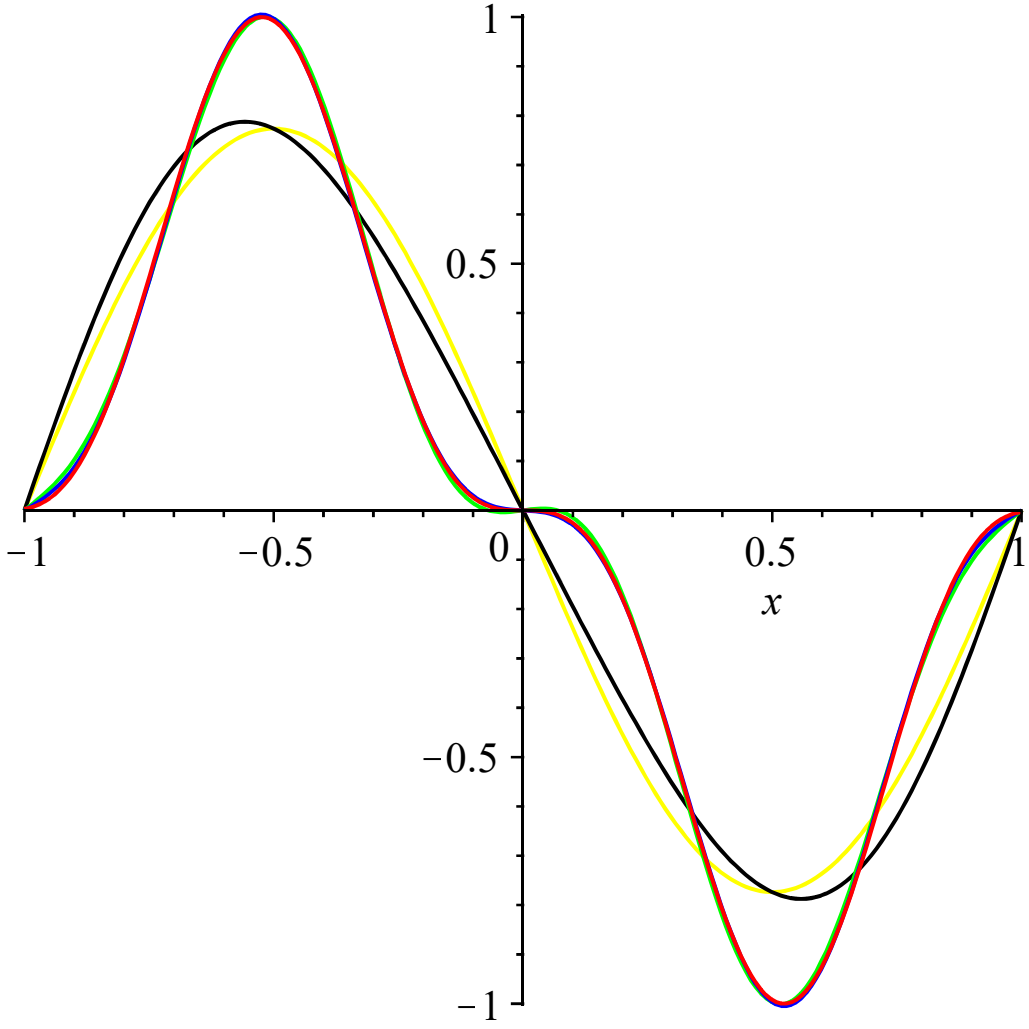



```
> fourierseries2 := proc(f, count) local n, l,
    a, b;
  l := (1 - (-1))/2;
   a[0] := int(f, x = -1..1)/l;
   a[n1] := int(f*cos(n1*Pi*x/l), x = -1..1)/l;
  b[n1] := int(f*sin(n1*Pi*x/l), x = -1..1)/l;
  return a[0]/2 + sum(a[n1]*cos(n1*Pi*x/l) + b[n1]*sin(n1*Pi*x/l), n1 = 1..count);
  end proc;
```

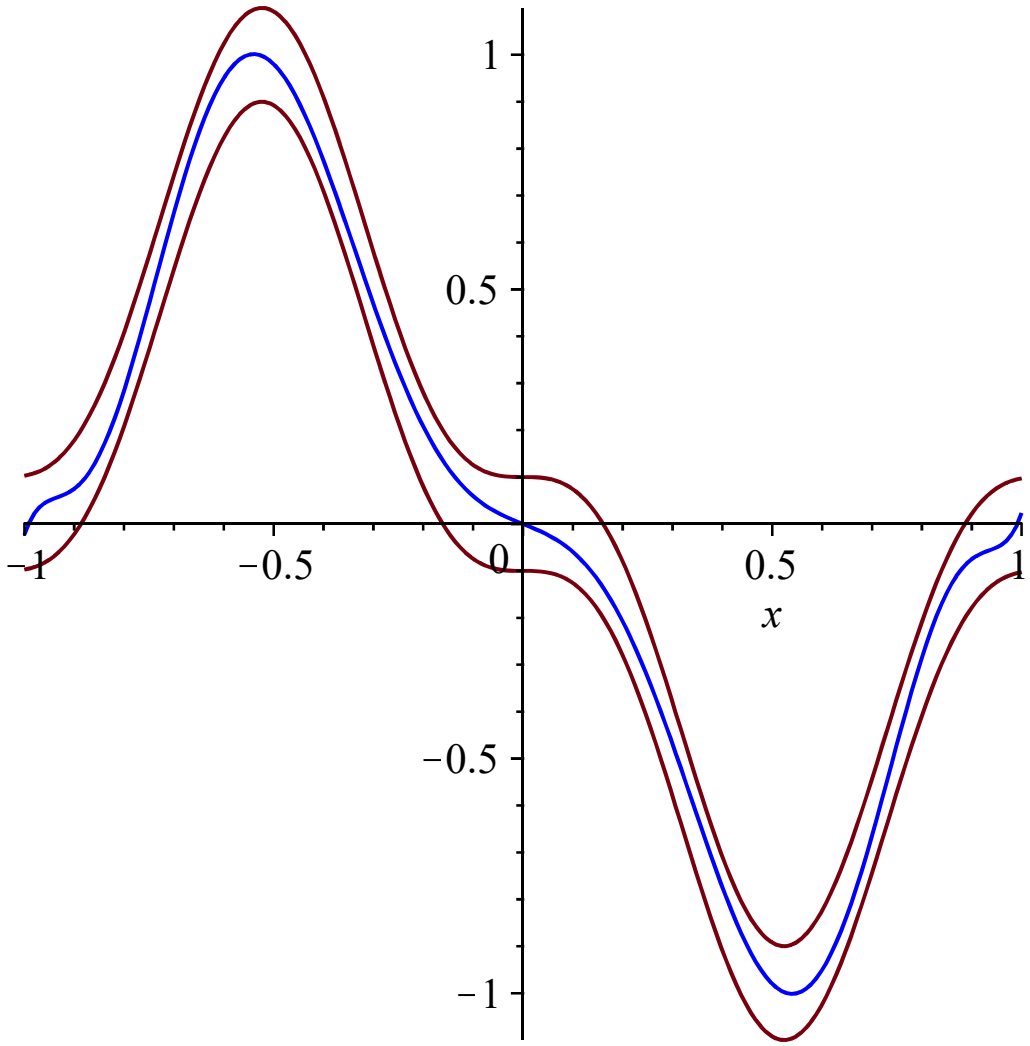
```
fourierseries2 := proc(f, count)                                    (10)
  local n, l, a, b;
  l := 1;
  a[0] := int(f, x = -1..1)/l;
  a[n1] := int(f*cos(n1*Pi*x/l), x = -1..1)/l;
  b[n1] := int(f*sin(n1*Pi*x/l), x = -1..1)/l;
```

```
    return 1/2*a[0]+sum(a[n1]*cos(n1*Pi*x/l)+b[n1]*sin(n1*Pi*x/l),n1=1
    ..count)
end proc
```

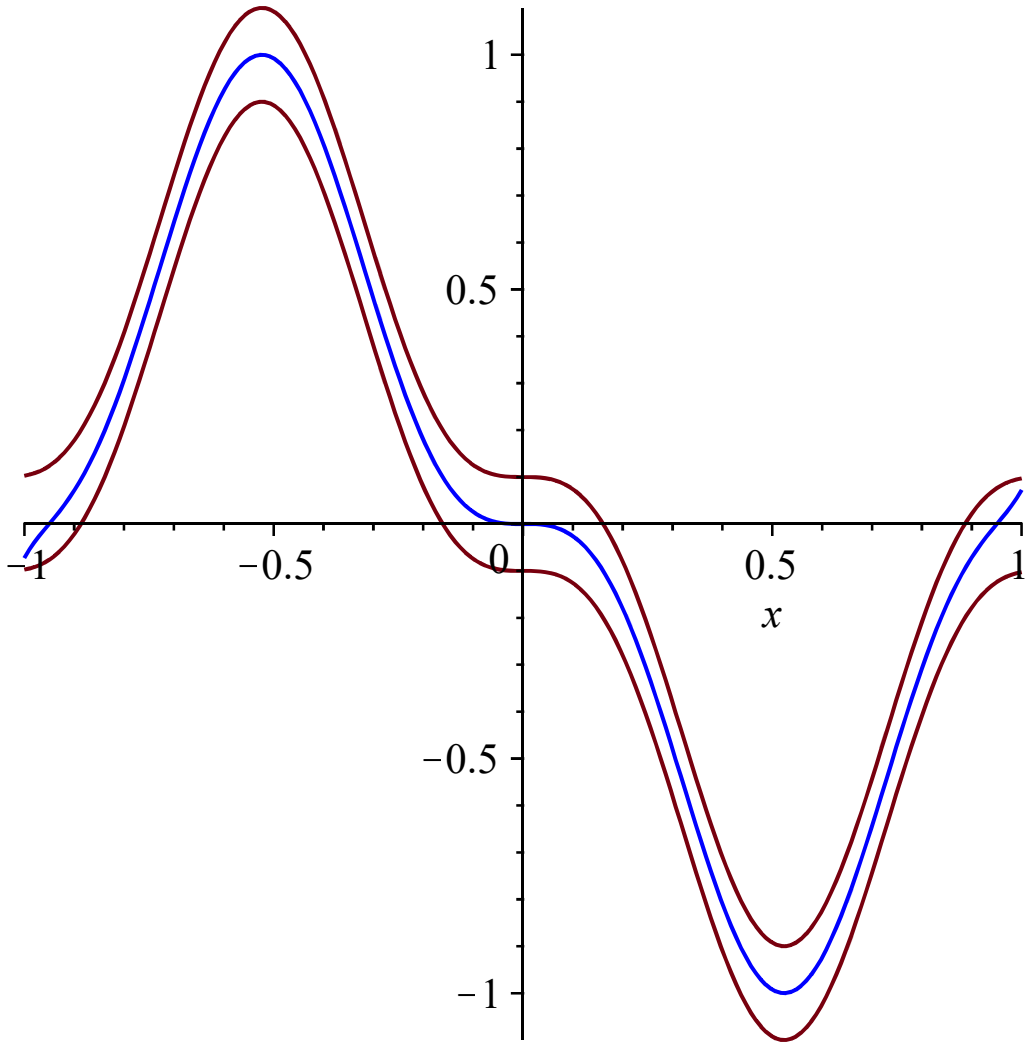
```
> d[1]:=plot(fourierseries2(f,1),x=-1..1,color=yellow):
  d[3]:=plot(fourierseries2(f,2),x=-1..1,color=black):
  d[5]:=plot(fourierseries2(f,3),x=-1..1,color=green):
  d[7]:=plot(fourierseries2(f,4),x=-1..1,color=blue):
  display([d[1],d[3],d[5],d[7],plot(f,x=-1..1,color=red)]);
```



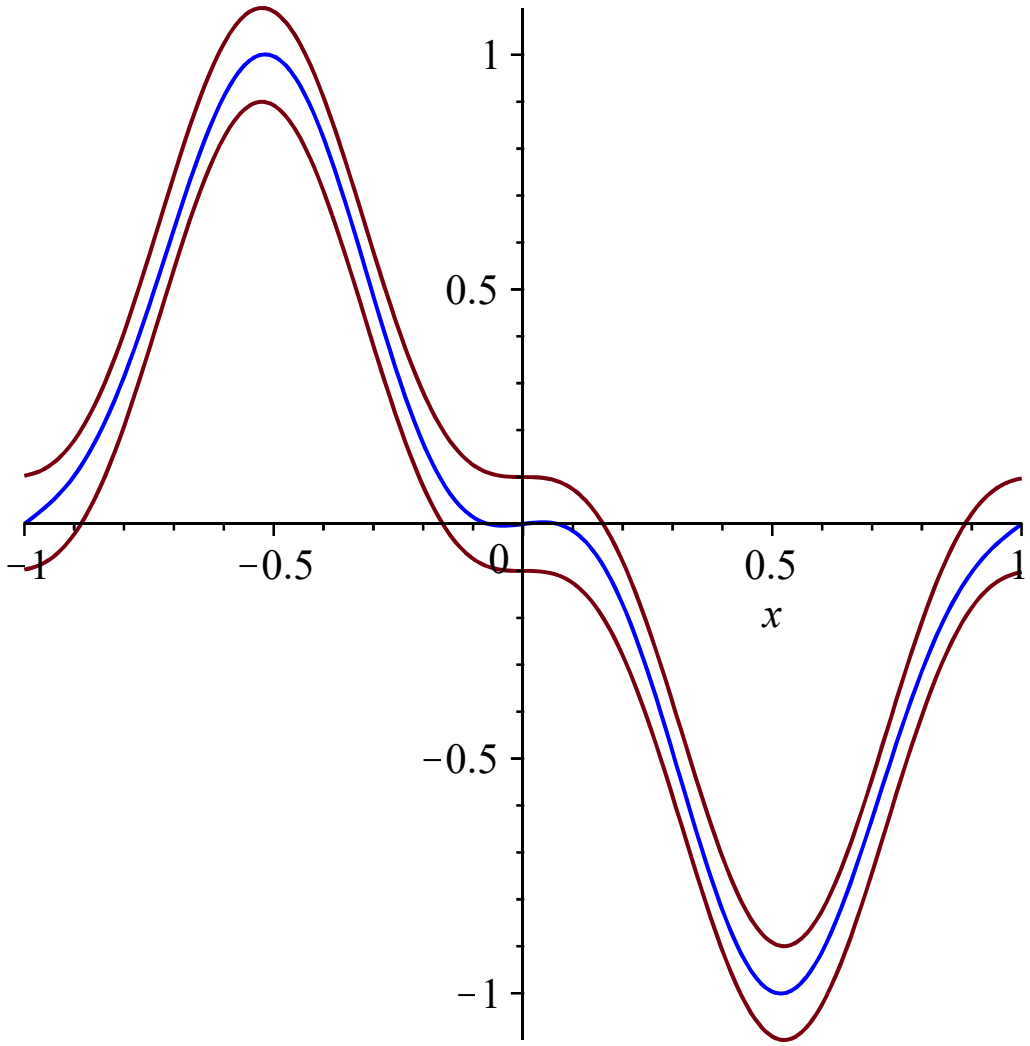

```
> fmin:=plot(f-0.1,x=-1..1):
  fmax:=plot(f+0.1,x=-1..1):
  pl:=plot(cheb(f,9),x=-1..1,colour=blue):
  display([fmin,fmax,pl]);
```



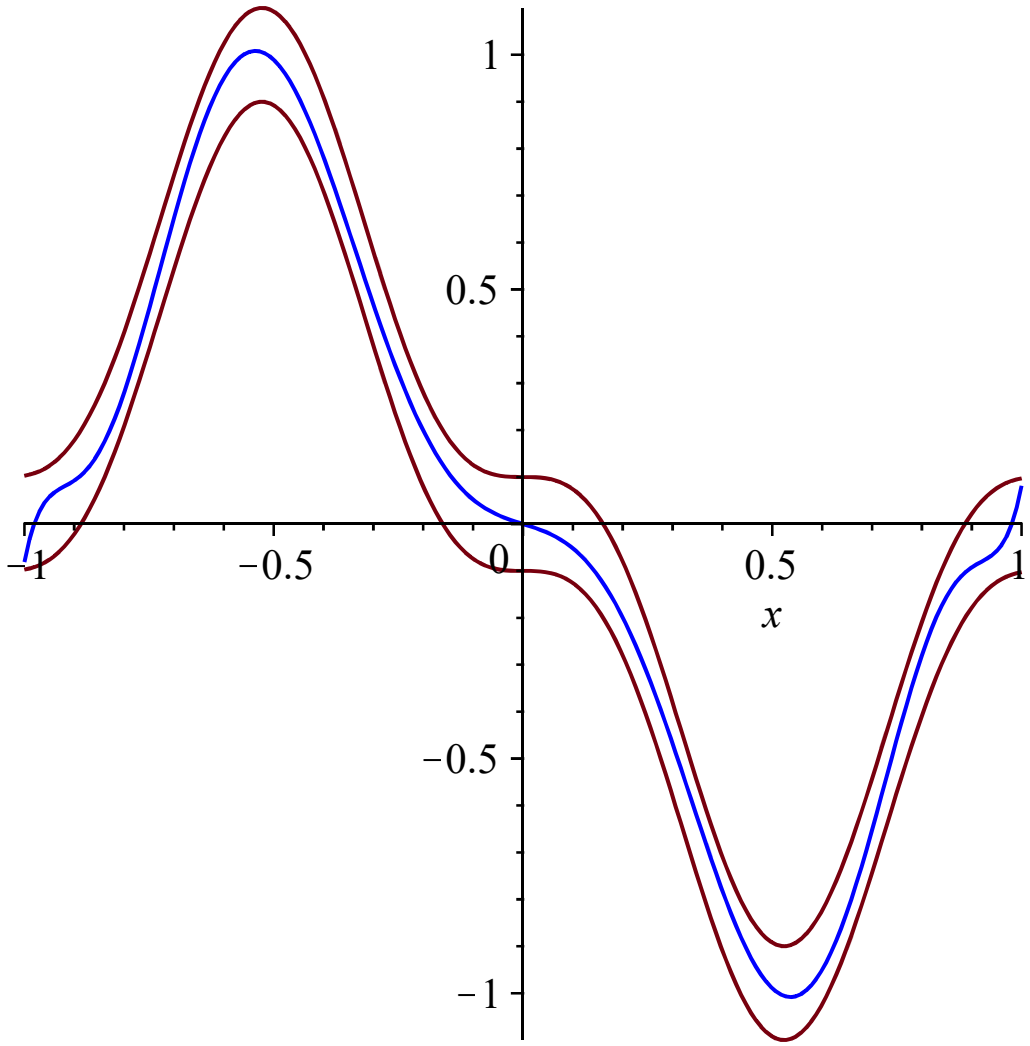

```
> fmin := plot( f − 0.1, x = -1 ..1 ) :
  fmax := plot( f + 0.1, x = -1 ..1 ) :
  pl := plot(Maclor( f, 21 ), x = -1 ..1, colour = blue) :
  display( [ fmin, fmax, pl ]);
```



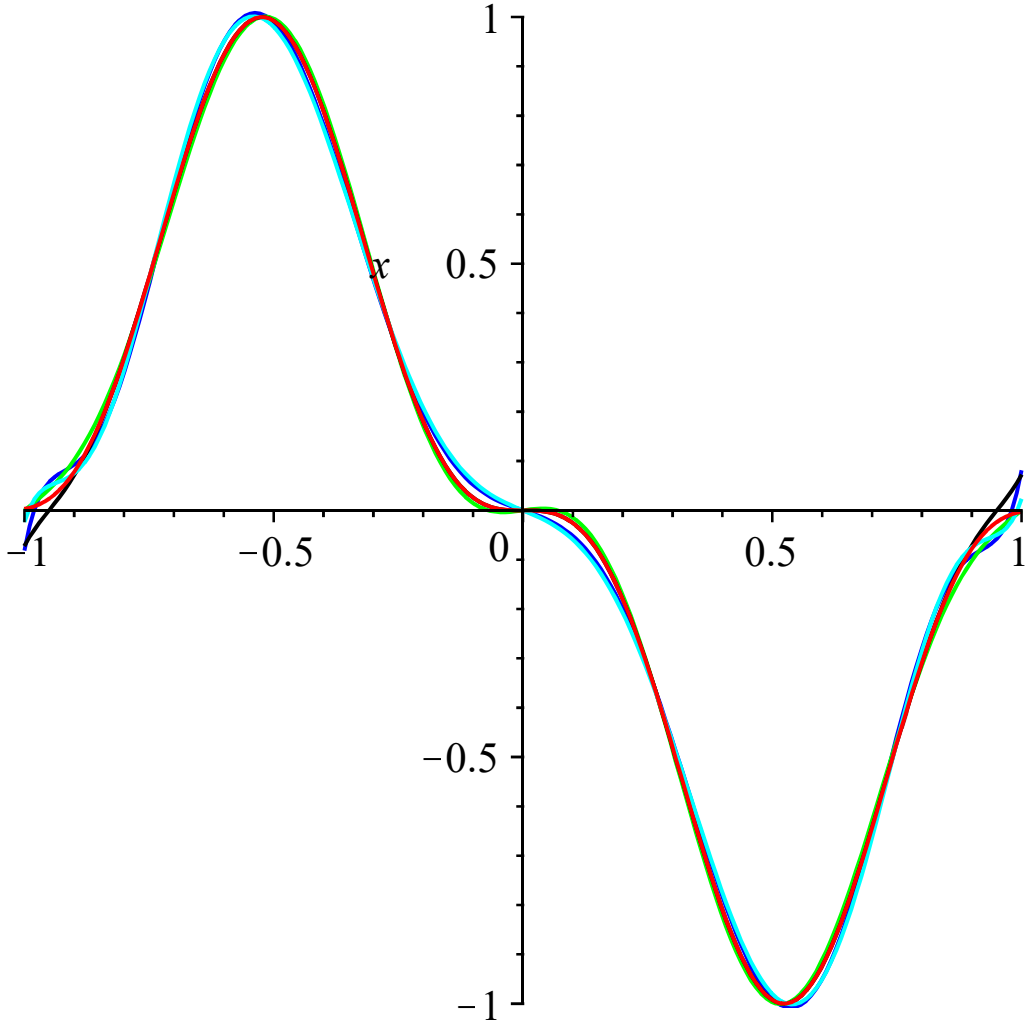

```
> fmin := plot( f − 0.1, x = -1 ..1 ) :
  fmax := plot( f + 0.1, x = -1 ..1 ) :
  pl := plot( fourierseries2( f, 3 ), x = -1 ..1, colour = blue) :
  display( [ fmin, fmax, pl ]);
```




```
> fmin := plot(f − 0.1, x = -1 ..1) :
  fmax := plot(f + 0.1, x = -1 ..1) :
  pl := plot(lej(f, 9), x = -1 ..1, colour = blue) :
  display([fmin, fmax, pl]);
```



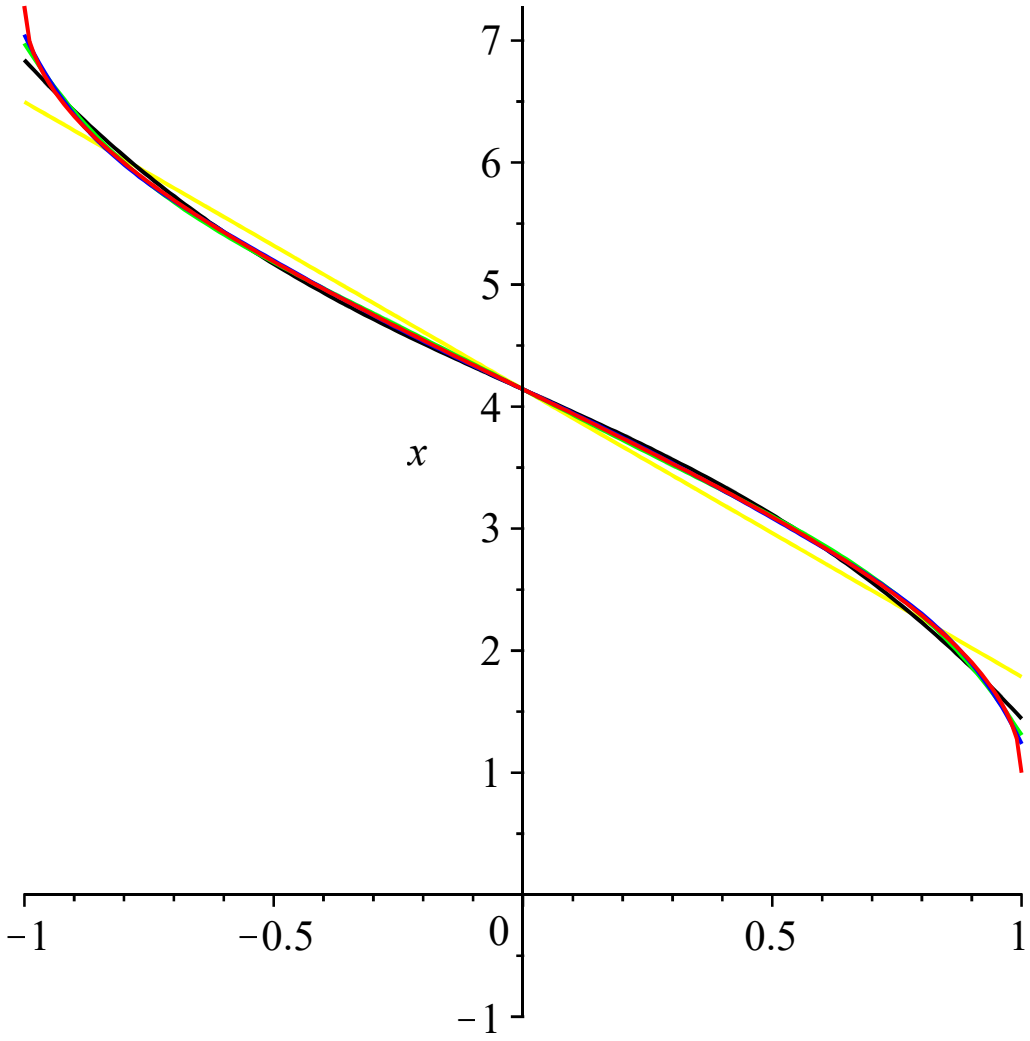

```
> plej := plot(lej(f, 9), x = -1 ..1, colour = blue) :
  pf := plot(fourierseries2(f, 3), x = -1 ..1, colour = green) :
  pm := plot(Maclor(f, 21), x = -1 ..1, colour = black) :
  pch := plot(cheb(f, 9), x = -1 ..1, colour = cyan) :
  pfx := plot(f, x = -1 ..1, color = red) :
  display([plej, pf, pm, pch, pfx]);
```



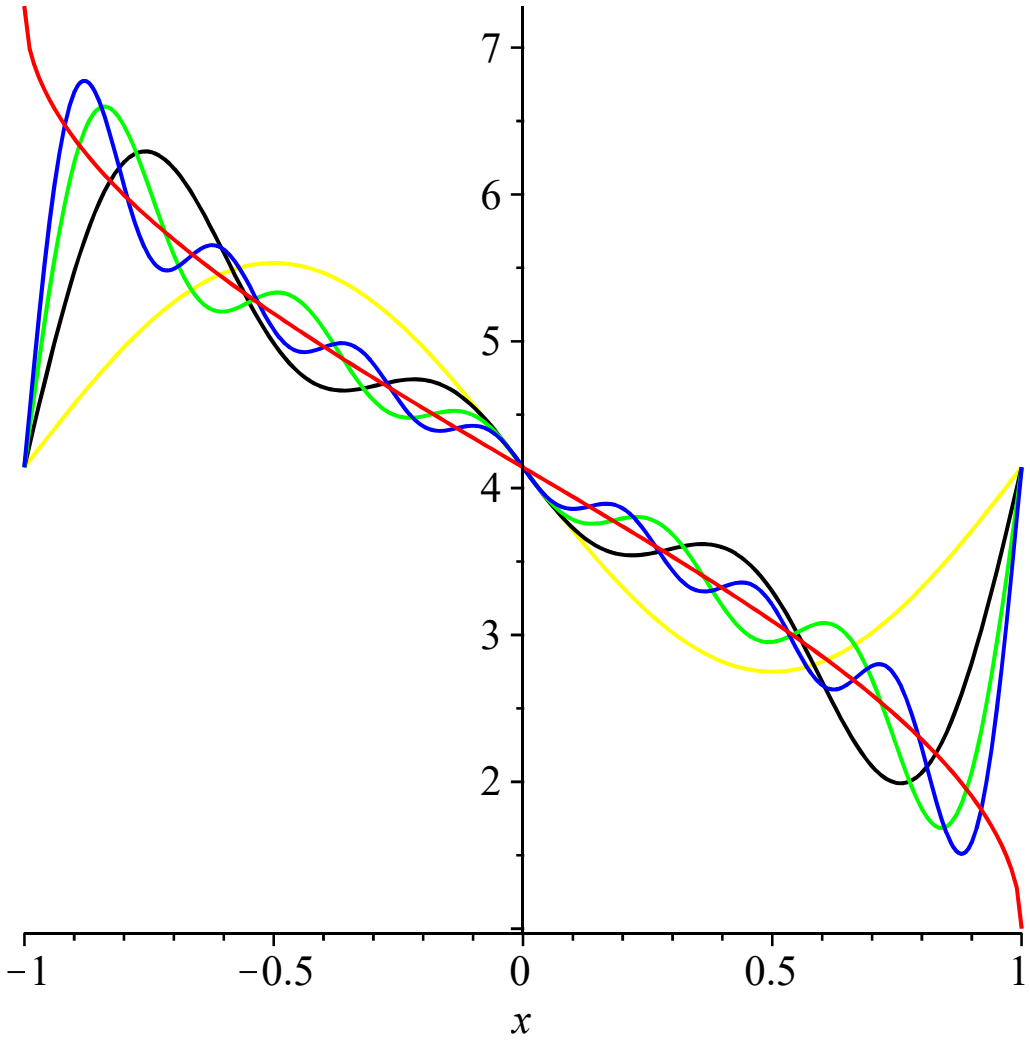

```
> f := 2·arccos(x) + 1;
```

$$f := 2\arccos(x) + 1 \qquad \textbf{(11)}$$

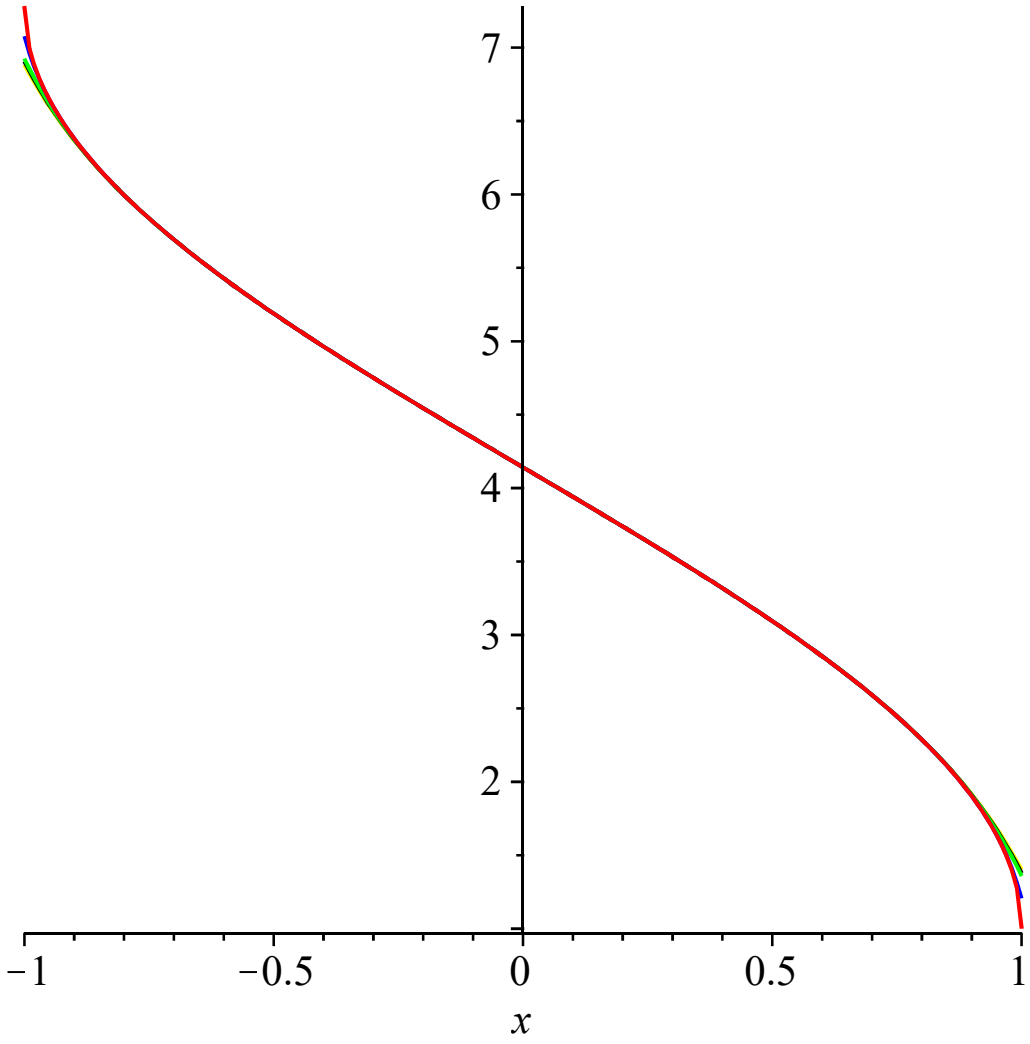
```
> d[1] := plot(lej(f, 1), x = -1..1, color = yellow) :
  d[3] := plot(lej(f, 3), x = -1..1, color = black) :
  d[5] := plot(lej(f, 5), x = -1..1, color = green) :
  d[7] := plot(lej(f, 7), x = -1..1, color = blue) :
  display([ d[1], d[3], d[5], d[7], plot(f, x = -1..1, color = red) ]);
```



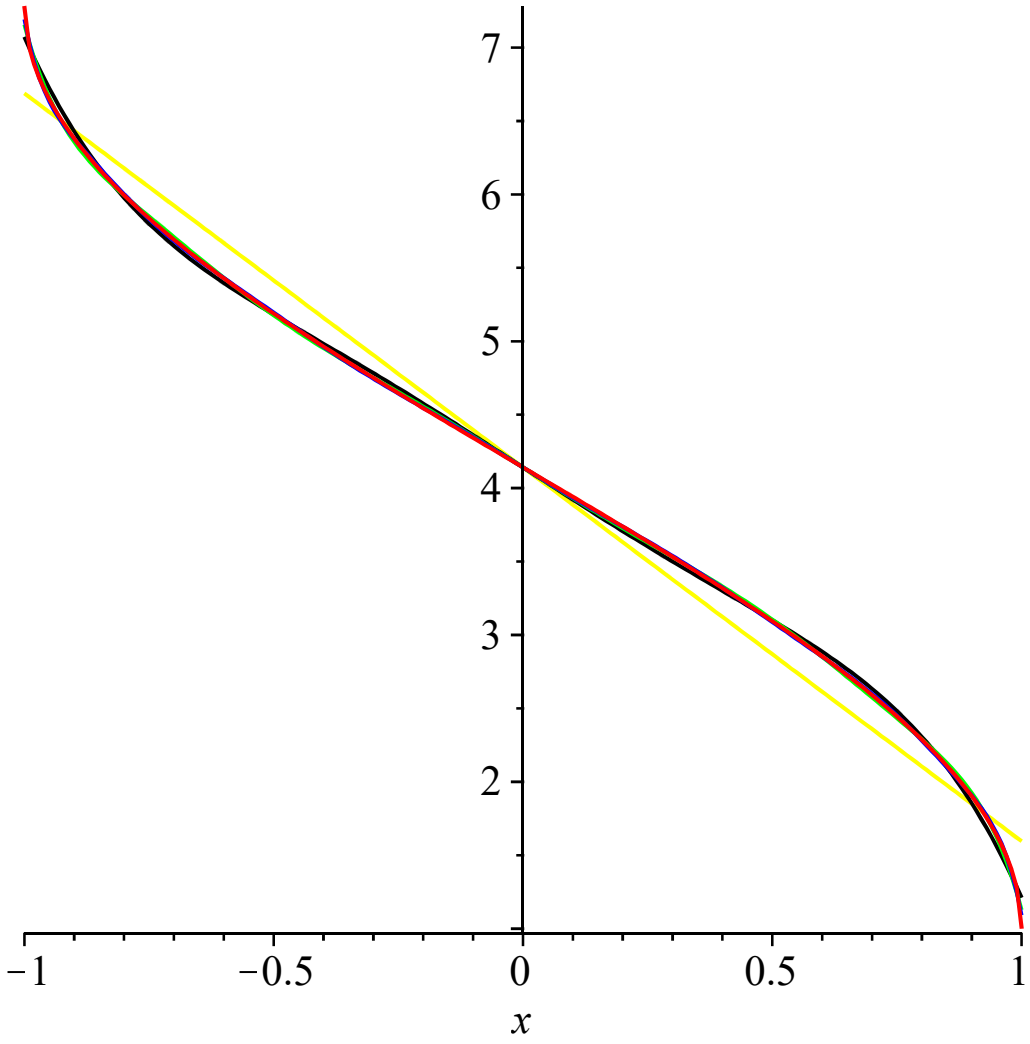

```
> d[1] := plot( fourierseries2( f, 1 ), x = -1 ..1, color = yellow ) :
  d[3] := plot( fourierseries2( f, 3 ), x = -1 ..1, color = black ) :
  d[5] := plot( fourierseries2( f, 5 ), x = -1 ..1, color = green ) :
  d[7] := plot( fourierseries2( f, 7 ), x = -1 ..1, color = blue ) :
 display( [ d[1], d[3], d[5], d[7], plot( f, x = -1 ..1, color = red ) ] );
```



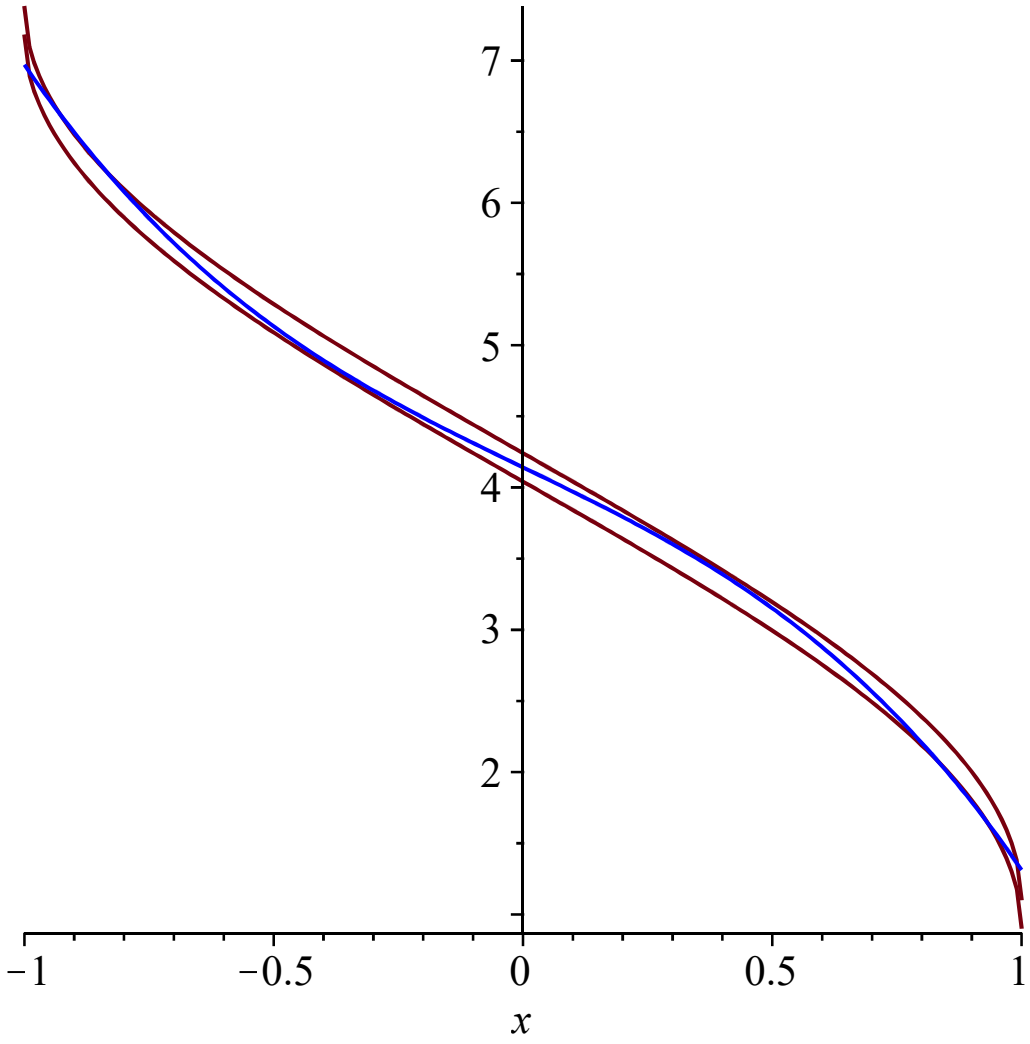

```
> d[1] := plot(Maclor(f, 15), x = -1 ..1, color = yellow) :
  d[3] := plot(Maclor(f, 17), x = -1 ..1, color = black) :
  d[5] := plot(Maclor(f, 20), x = -1 ..1, color = green) :
  d[7] := plot(Maclor(f, 60), x = -1 ..1, color = blue) :
  display([ d[1], d[3], d[5], d[7], plot(f, x = -1 ..1, color = red) ]);
```



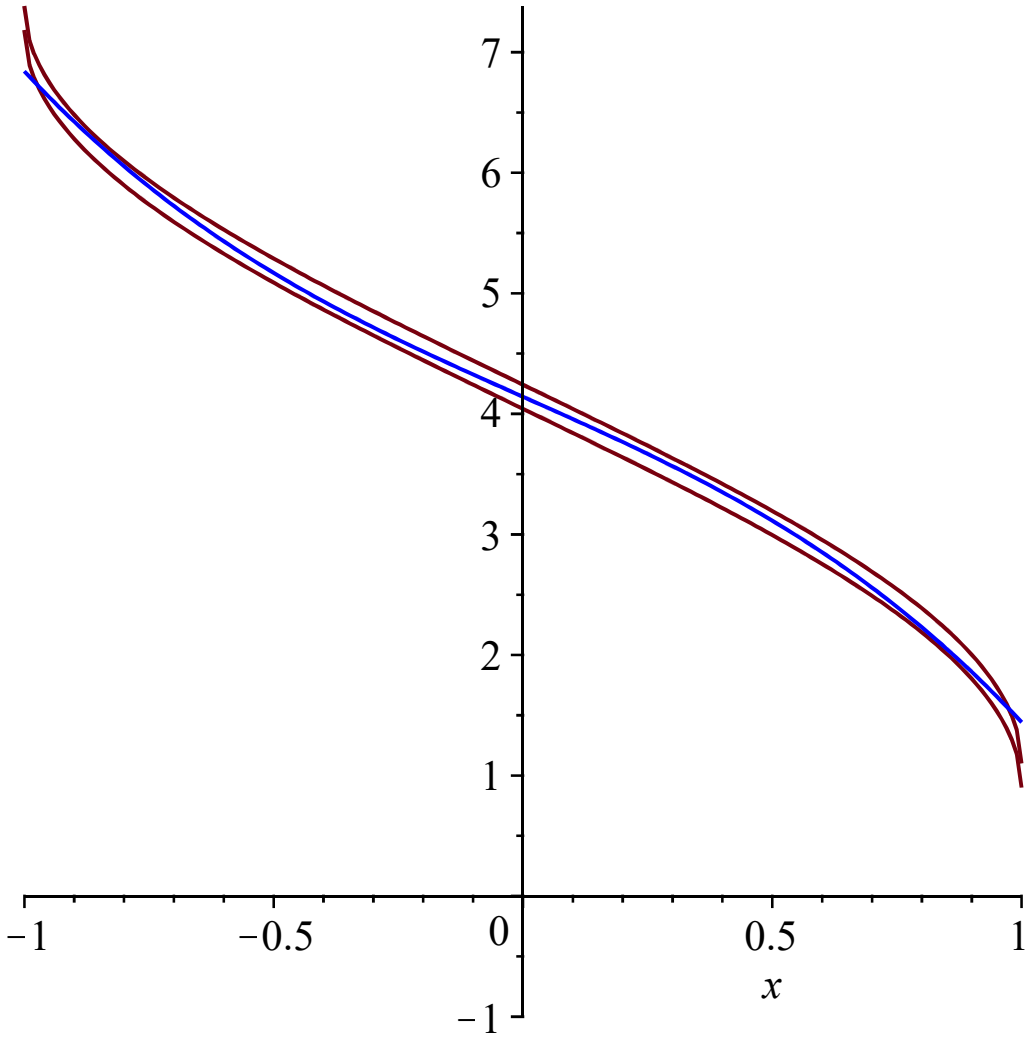

```
> d[1] := plot(cheb(f, 2), x = -1 ..1, color = yellow) :
  d[3] := plot(cheb(f, 6), x = -1 ..1, color = black) :
  d[5] := plot(cheb(f, 10), x = -1 ..1, color = green) :
  d[7] := plot(cheb(f, 14), x = -1 ..1, color = blue) :
  display([ d[1], d[3], d[5], d[7], plot(f, x = -1 ..1, color = red) ]);
```



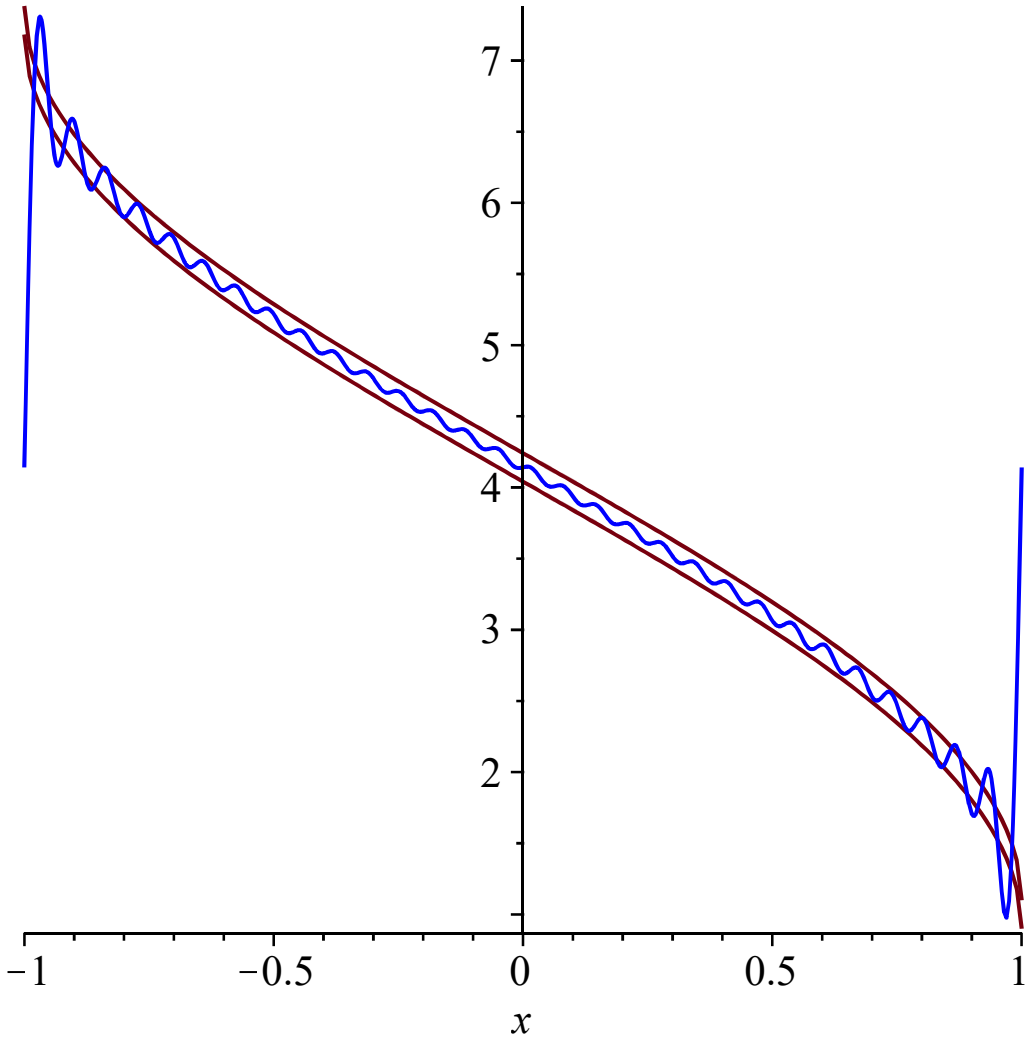

```
> fmin := plot( f − 0.1, x = -1 ..1 ) :
  fmax := plot( f + 0.1, x = -1 ..1 ) :
  pl := plot(cheb( f, 3 ), x = -1 ..1, colour = blue) :
  display( [ fmin, fmax, pl ]);
```



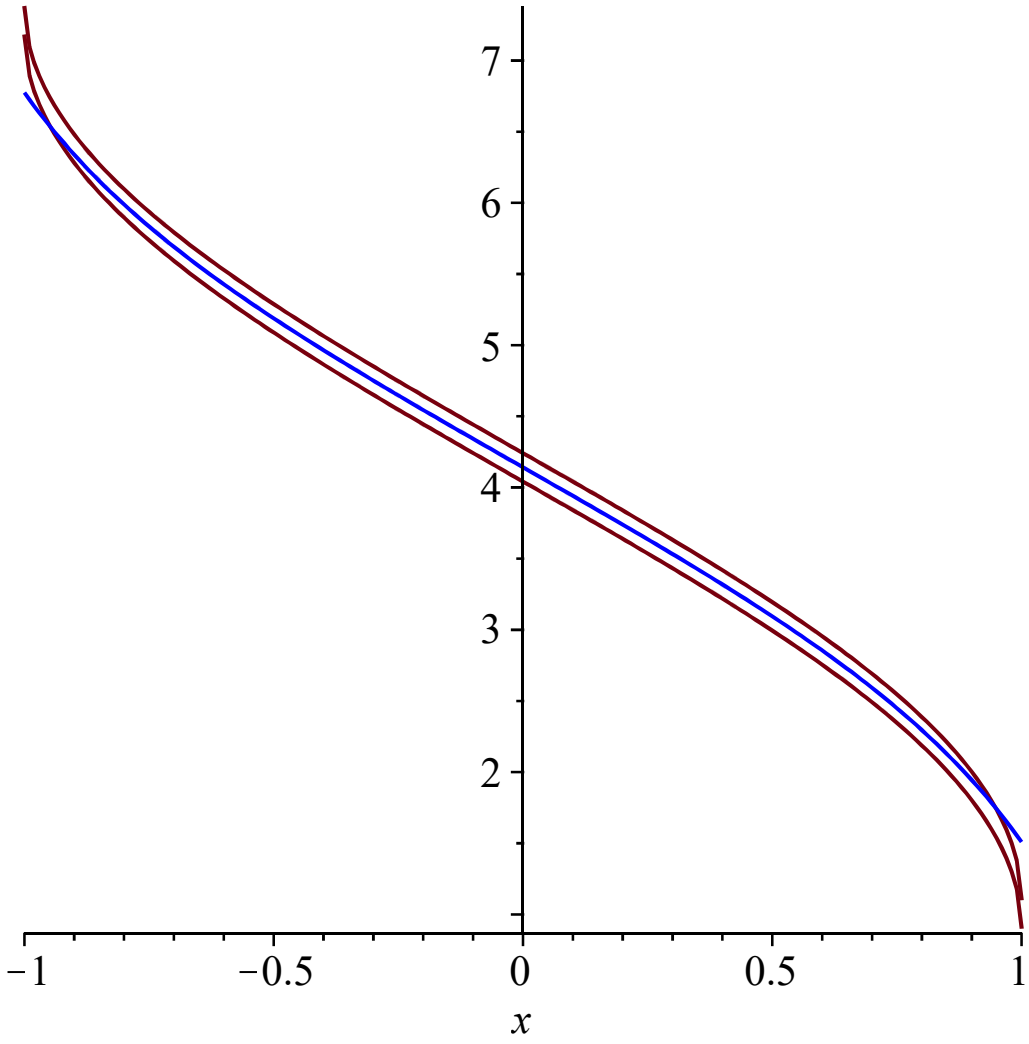

```
> fmin := plot( f − 0.1, x =-1 ..1 ) :
  fmax := plot( f + 0.1, x =-1 ..1 ) :
  pl := plot( lej( f, 3 ), x =-1 ..1, colour = blue) :
  display( [ fmin, fmax, pl ]);
```



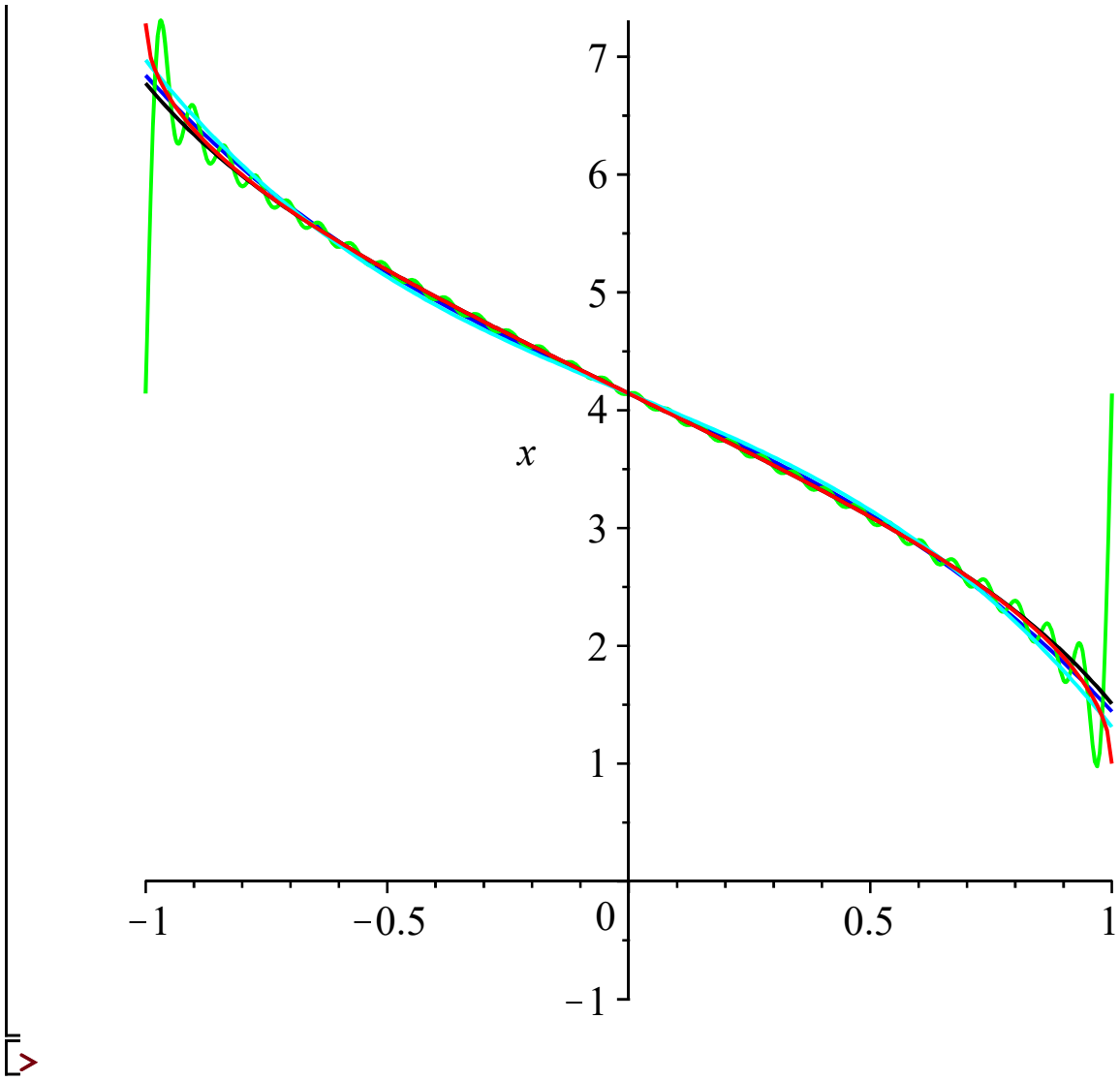

```
> fmin := plot( f − 0.1, x = -1 ..1 ) :
  fmax := plot( f + 0.1, x = -1 ..1 ) :
  pl := plot( fourierseries2( f, 30 ), x = -1 ..1, colour = blue) :
  display( [ fmin, fmax, pl ]);
```




```
> fmin := plot( f − 0.1, x = -1 ..1 ) :
  fmax := plot( f + 0.1, x = -1 ..1 ) :
  pl := plot(Maclor( f, 10 ), x = -1 ..1, colour = blue) :
  display( [ fmin, fmax, pl ]);
```




```
> plej := plot(lej(f, 3), x = -1 ..1, colour = blue) :
  pf := plot(fourierseries2(f, 30), x = -1 ..1, colour = green) :
  pm := plot(Maclor(f, 10), x = -1 ..1, colour = black) :
  pch := plot(cheb(f, 3), x = -1 ..1, colour = cyan) :
  pfx := plot(f, x = -1 ..1, color = red) :
  display([plej, pf, pm, pch, pfx]);
```


7
6
5
4
x
3
2
1
−1
−0.5
0
0.5
1
−1
>