

$w := 5 + 17;$

22

(1)

$w^2;$

961

(2)

$w := 31;$

31

(3)

$wrd := 42 :$
 $diff(x^2 - \ln(\sin(x)), x);$

$$2\,x - \frac{\cos(x)}{\sin(x)}$$

(4)

$int(x^2 - \ln(\sin(x)), x);$

$$\frac{1}{3}\,x^3 + x\ln\left(1 - e^{2\,I\,x}\right) - x\ln(\sin(x)) - \frac{1}{2}\,I\,x^2 - \frac{1}{2}\,I\,\text{polylog}\left(2, e^{2\,I\,x}\right)$$

(5)

$int(x^2 \cdot \exp(-x), x);$

$$-\left(x^2 + 2\,x + 2\right)\,e^{-x}$$

(6)

$int(x^2 \cdot \exp(-x), x = 0..1);$

$$2 - 5\,e^{-1}$$

(7)

$evalf(%);$

0.160602794

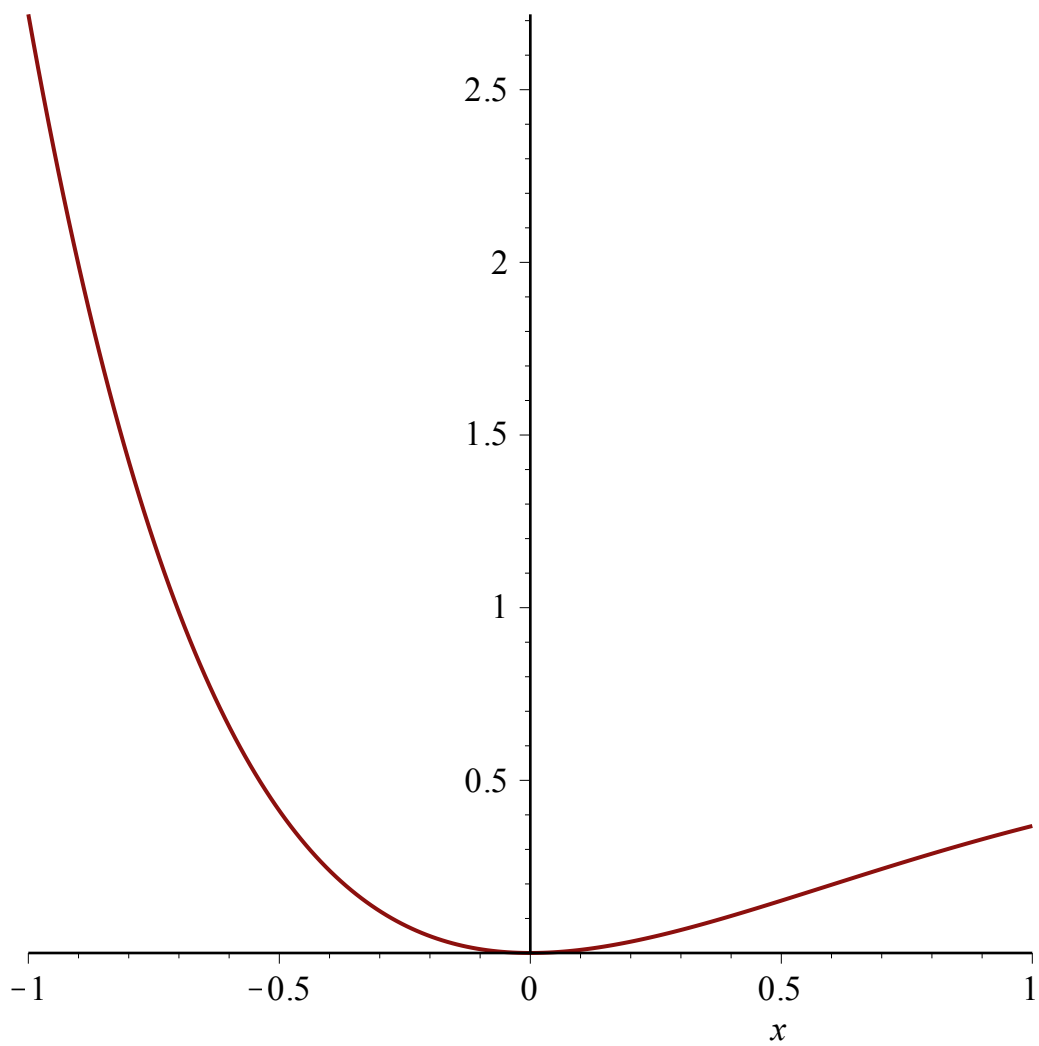
(8)

$Digits := 50 :$
 $evalf(%%);$

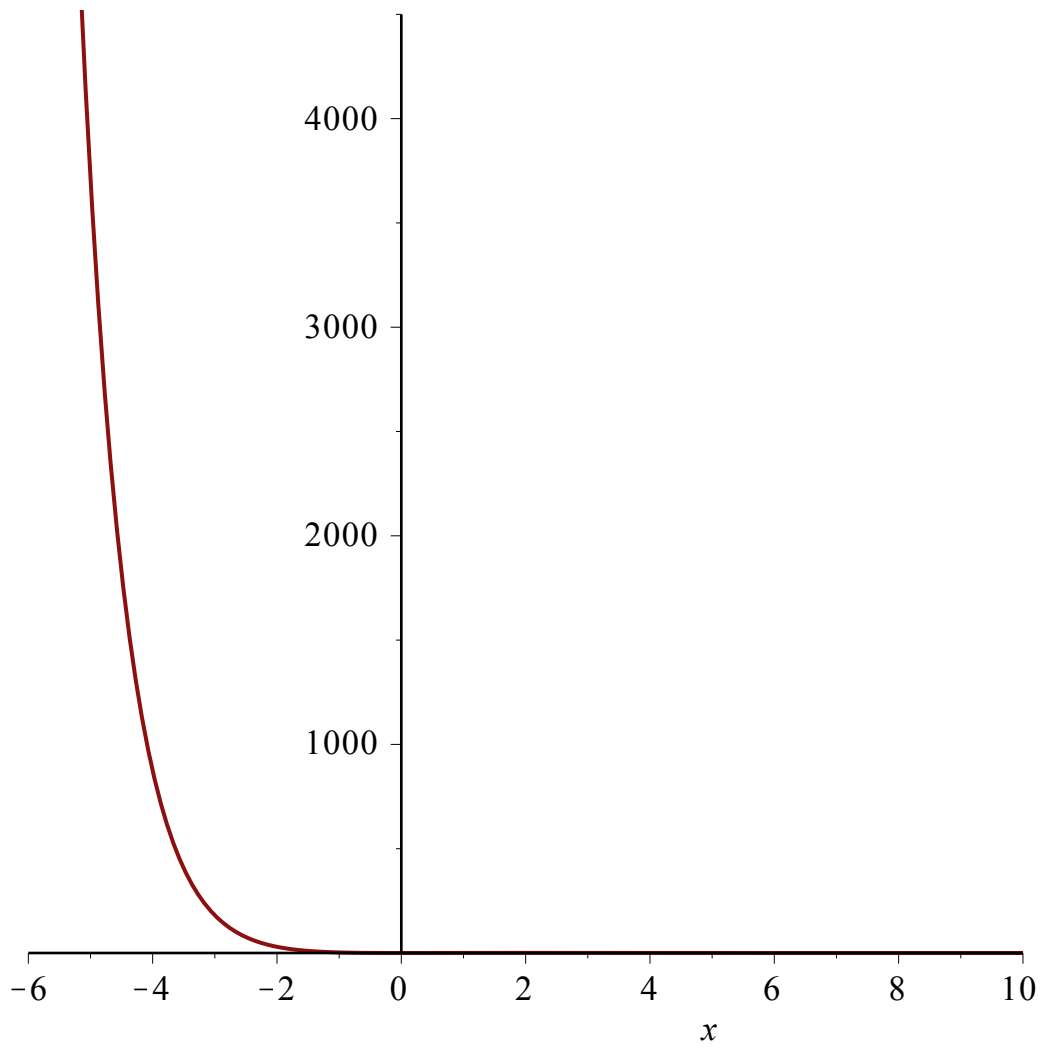
0.1606027941427883920223811491926956627709443448412

(9)

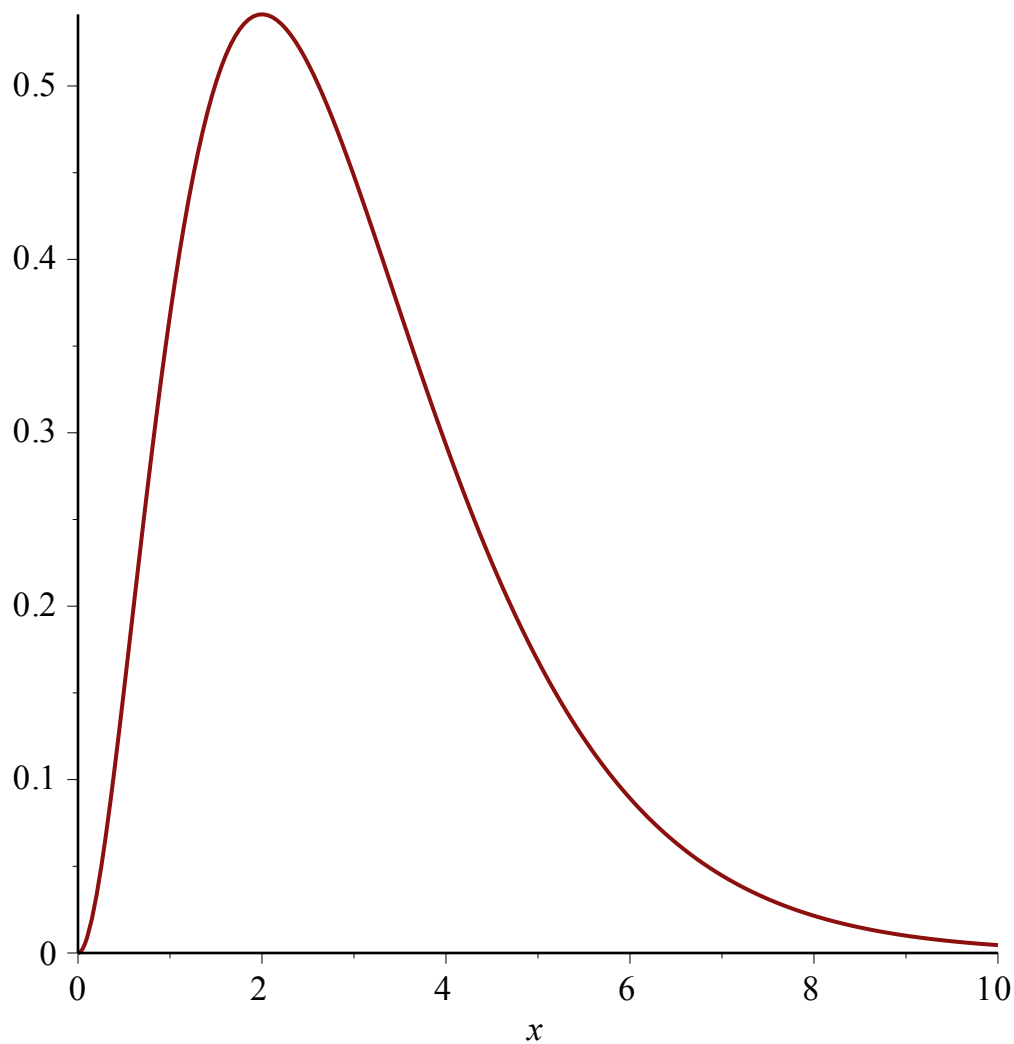
$Digits := 10 :$
 $plot(x^2 \cdot \exp(-x), x = -1..1);$



`plot(x^2*exp(-x), x=-10..10);`



`plot(x^2 * exp(-x), x = 0..10);`



$$\text{diff}(x^2 \cdot \exp(-x), x);$$

$$2 x e^{-x} - x^2 e^{-x} \quad (10)$$

$$\text{solve}(\% = 0, x);$$

$$0, 2 \quad (11)$$

$$\text{diff}(\%, x);$$

$$2 e^{-x} - 4 x e^{-x} + x^2 e^{-x} \quad (12)$$

$$d2 := \%;$$

$$2 e^{-x} - 4 x e^{-x} + x^2 e^{-x} \quad (13)$$

$$\text{subs}(x = 0, d2);$$

$$2 e^0 \quad (14)$$

$$\text{subs}(x = 2, d2);$$

$$-2 e^{-2} \quad (15)$$

$$\text{evalf}(\%);$$

$$-0.2706705664 \quad (16)$$

$$\text{limit}(x^2 \cdot \exp(-x), x = \text{infinity});$$

0

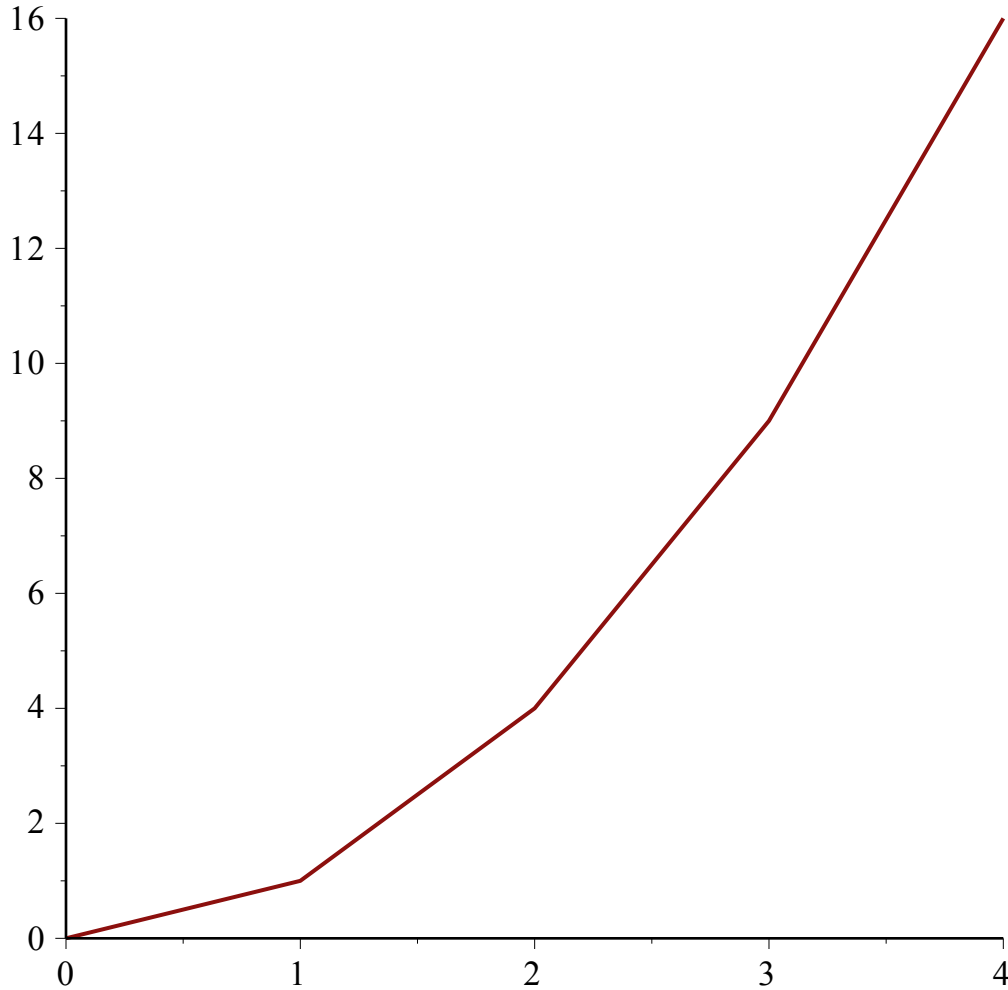
(17)

$p := [[0, 0], [1, 1], [2, 4], [3, 9], [4, 16]];$

$[[0, 0], [1, 1], [2, 4], [3, 9], [4, 16]]$

(18)

$plot(p);$



$plot1 := plot(p, style = point, symbol = circle, colour = blue) :$

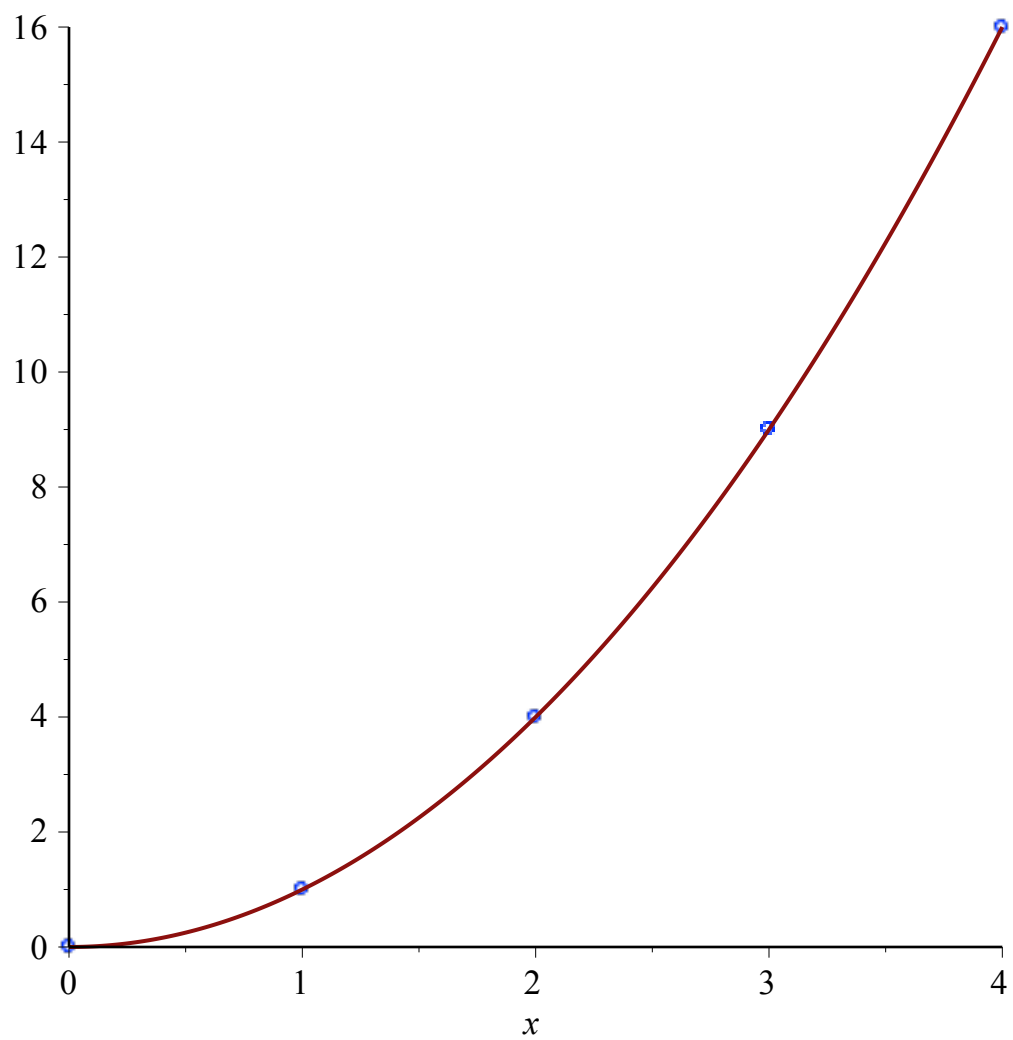
$plot2 := plot(x^2, x = 0..4) :$

$with(plots);$

$[animate, animate3d, animatecurve, arrow, changecoords, complexplot, complexplot3d,$
 $conformal, conformal3d, contourplot, contourplot3d, coordplot, coordplot3d, densityplot,$
 $display, dualaxisplot, fieldplot, fieldplot3d, gradplot, gradplot3d, implicitplot, implicitplot3d,$
 $inequal, interactive, interactiveparams, intersectplot, listcontplot, listcontplot3d,$
 $listdensityplot, listplot, listplot3d, loglogplot, logplot, matrixplot, multiple, odeplot, pareto,$
 $plotcompare, pointplot, pointplot3d, polarplot, polygonplot, polygonplot3d,$
 $polyhedra_supported, polyhedraplot, rootlocus, semilogplot, setcolors, setoptions,$
 $setoptions3d, spacecurve, sparsematrixplot, surfdata, textplot, textplot3d, tubeplot]$

(19)

$display([plot1, plot2]);$

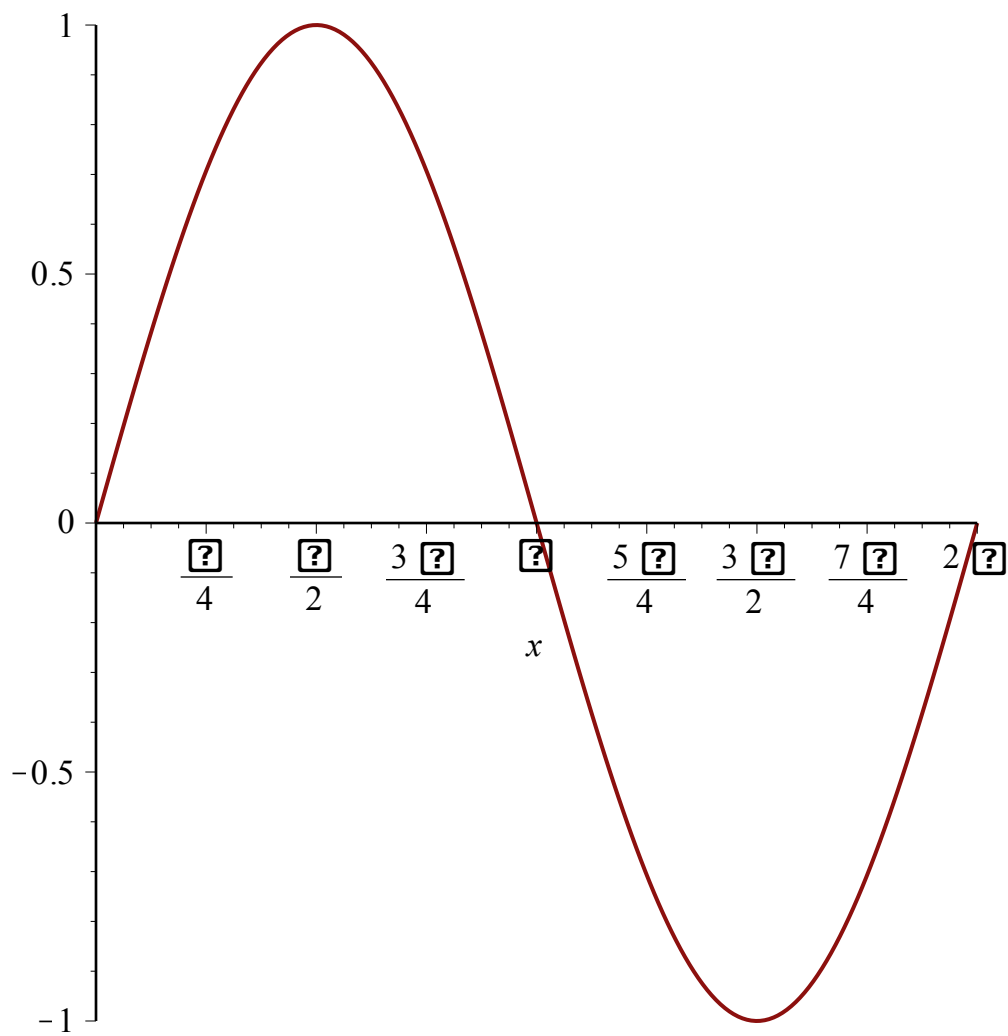


$f := \sin(a \cdot x);$

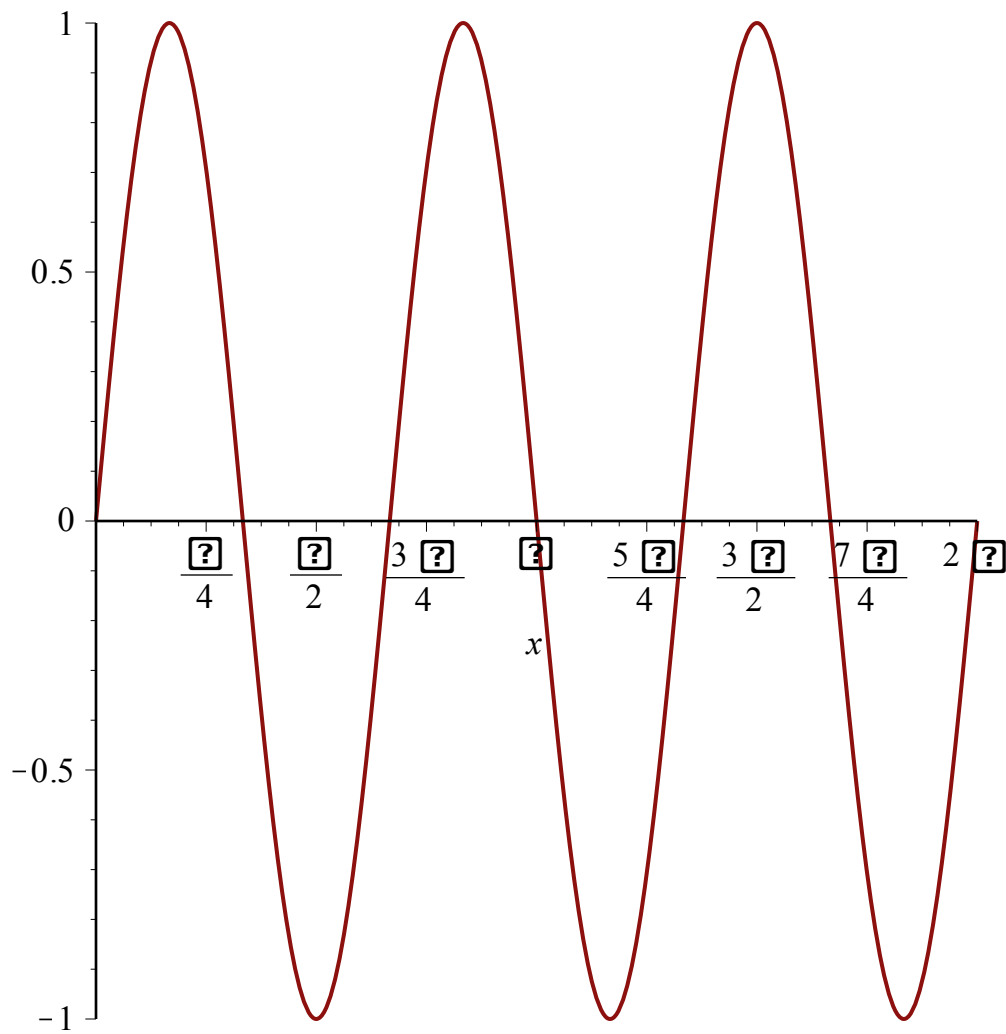
$\sin(a \cdot x)$

(20)

$\text{plot}(\text{subs}(a = 1, f), x = 0 .. 2 \cdot \text{Pi});$



`plot(subs(a=3,f), x=0..2·Pi);`

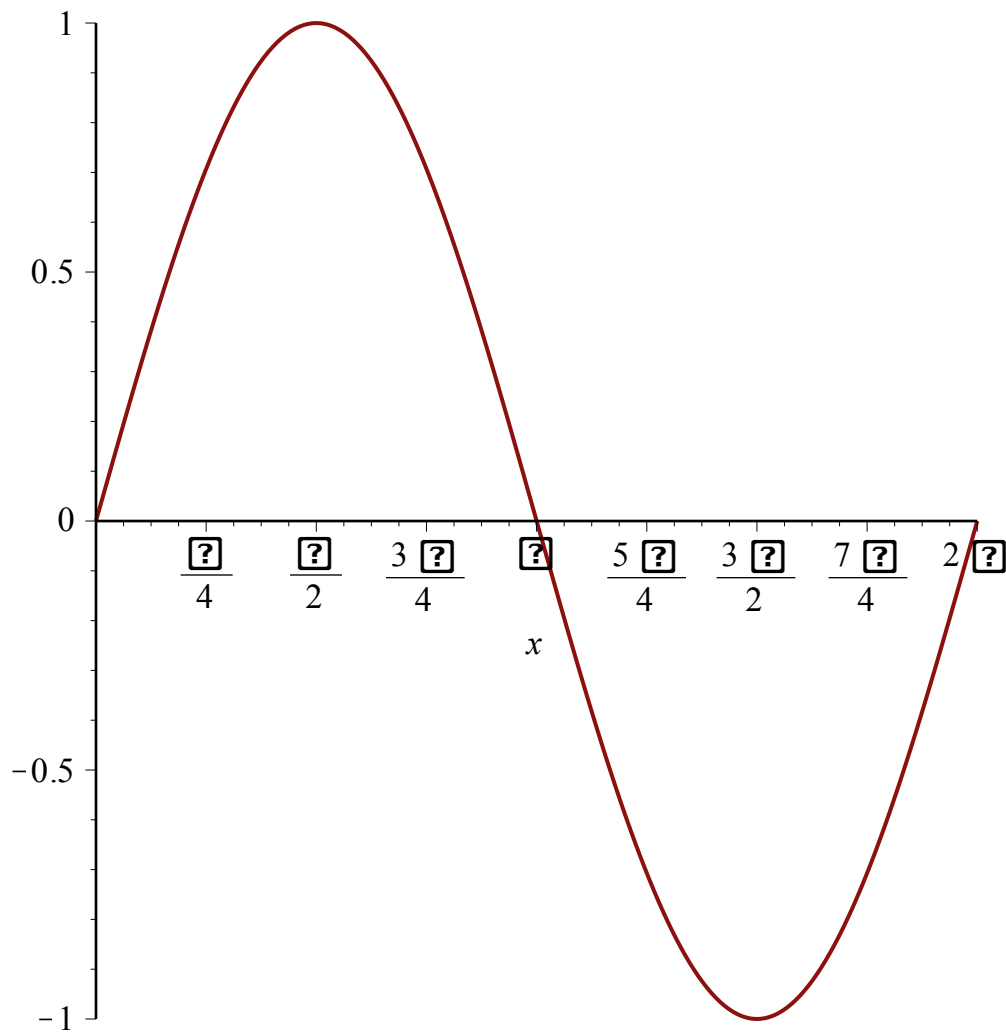


```

plot1 := plot(subs(a = 1, f), x = 0 .. 2·Pi) :
plot2 := plot(subs(a = 2, f), x = 0 .. 2·Pi) :
plot3 := plot(subs(a = 3, f), x = 0 .. 2·Pi) :
plot4 := plot(subs(a = 4, f), x = 0 .. 2·Pi) :
plot5 := plot(subs(a = 5, f), x = 0 .. 2·Pi) :

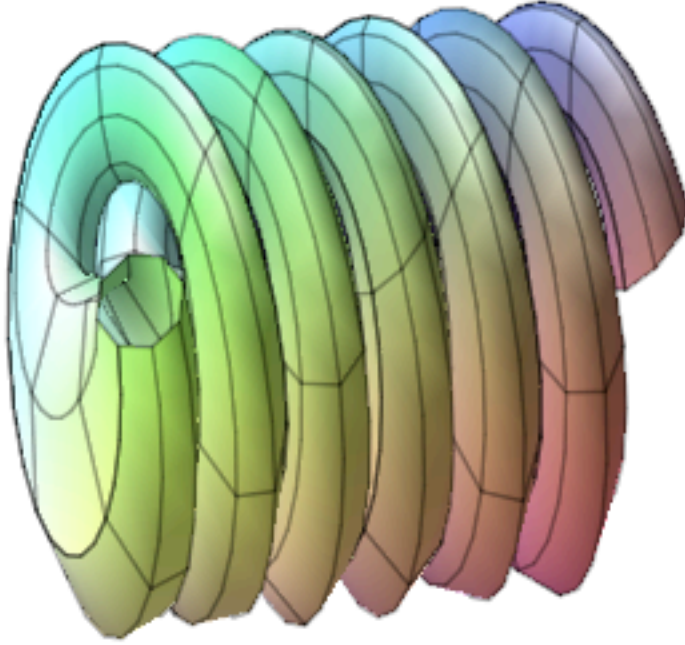
display([plot1, plot2, plot3, plot4, plot5], insequence = true);

```

?tubeplot

tubeplot([3 sin(*t*), *t*, 4 cos(*t*)], *t* = -5 π .. 7 π , *radius* = 2.2 + sin(*t*), *numpoints* = 160);



$$\begin{aligned} O[n+1] &= 1.2 \cdot O[n] - 0.001 \cdot O[n] \cdot H[n]; \\ O_{n+1} &= 1.2 O_n - 0.001 O_n H_n \end{aligned} \quad (21)$$

$$\begin{aligned} H[n+1] &= 1.3 \cdot H[n] - 0.002 \cdot O[n] \cdot H[n]; \\ H_{n+1} &= 1.3 H_n - 0.002 O_n H_n \end{aligned} \quad (22)$$

$$\begin{aligned} f &:= 1.2 \cdot O - 0.001 \cdot O \cdot H; \\ &1.2 O - 0.001 O H \end{aligned} \quad (23)$$

$$\begin{aligned} \text{subs}(O = 100, H = 150, f); \\ 105.000 \end{aligned} \quad (24)$$

$$\begin{aligned} g &:= (O, H) \rightarrow 1.2 \cdot O - 0.001 \cdot O \cdot H; \\ (O, H) &\rightarrow 1.2 O + (-1) \cdot 0.001 O H \end{aligned} \quad (25)$$

$$\begin{aligned} g(100, 150); \\ 105.000 \end{aligned} \quad (26)$$

```

plts := NULL :
Owl := 151 :
Hawk := 199 :
pnts := [Owl, Hawk] :
gO := (Owl, Hawk) → 1.2 · Owl − 0.001 · Owl · Hawk;

```

```

gH := (Owl, Hawk) → 1.3 · Hawk − 0.002 · Owl · Hawk;
print(Owl, Hawk);
for i from 1 to 24 do
  temporaryOwl := gO(Owl, Hawk);
  Hawk := gH(Owl, Hawk);
  Owl := temporaryOwl;
  print(Owl, Hawk);
  pnts := pnts, [Owl, Hawk];
  plts := plts, plot([pnts], style = point, symbol = circle, colour = green);
od:
plts := [plts];
display(plts, insequence = true);

```

$(Owl, Hawk) \rightarrow 1.2 \text{ Owl} + (-1) \cdot 0.001 \text{ Owl Hawk}$

$(Owl, Hawk) \rightarrow 1.3 \text{ Hawk} + (-1) \cdot 0.002 \text{ Owl Hawk}$

151, 199

151.151, 198.602

151.3623091, 198.1448182

151.6431137, 197.6049493

152.0063066, 196.9555745

152.4690785, 196.1652679

153.0537566, 195.1965730

153.7889391, 194.0044074

154.7109949, 192.5342656

155.8660261, 190.7202097

157.3124301, 188.4826702

159.1242492, 185.7261375

161.3955668, 182.3369144

164.2463106, 178.1812494

167.8299599, 173.1043985

172.3438476, 166.9315095

178.0429985, 159.4717251

185.2587741, 150.5275944

194.4239713, 139.9127575

206.1063716, 127.4817969

221.0528353, 113.1767148

240.2453687, 97.09366181

264.9681398, 79.56915524

296.8784768, 61.27331970

338.0634424, 43.27385597

