```
> with(DETools);
  with(plots);
  p0 := DEplot(diff(y(x), x, x)+4*y(x) = 0, y(x), x = 0 .. 10, [[(D
  (y))(0) = 0, y(0) = 0]], linecolor = "Red");
  p1 := DEplot(diff(y(x), x, x)+4*y(x) = 0, y(x), x = 0 .. 10, [[(D
  (y))(0) = 0, y(0) = 1]], linecolor = "GreenYellow");
  p2 := DEplot(diff(y(x), x, x)+4*y(x) = 0, y(x), x = 0 .. 10, [[(D
  (y))(0) = 0, y(0) = 2]], linecolor = "Purple");
  p3 := DEplot(diff(y(x), x, x)+4*y(x) = 0, y(x), x = 0 .. 10, [[(D
  (y))(0) = 0, y(0) = 3]], linecolor = "Blue");
  p4 := DEplot(diff(y(x), x, x)+4*y(x) = 0, y(x), x = 0 .. 10, [[(D
  (y))(0) = 0, y(0) = Pi]], linecolor = "Black");

  q0 := DEplot(diff(y(x), x, x)+4*y(x) = 0, y(x), x = 0 .. 10, [[(D
  (y))(0) = 0, y(0) = 0.1]], linecolor = "Red");
  q1 := DEplot(diff(y(x), x, x)+4*y(x) = 0, y(x), x = 0 .. 10, [[(D
  (y))(0) = 0, y(0) = 0.2]], linecolor = "GreenYellow");
  q2 := DEplot(diff(y(x), x, x)+4*y(x) = 0, y(x), x = 0 .. 10, [[(D
  (y))(0) = 0, y(0) = 0.3]], linecolor = "Purple");
  q3 := DEplot(diff(y(x), x, x)+4*y(x) = 0, y(x), x = 0 .. 10, [[(D
  (y))(0) = 0, y(0) = 0.4]], linecolor = "Blue");
  q4 := DEplot(diff(y(x), x, x)+4*y(x) = 0, y(x), x = 0 .. 10, [[(D
  (y))(0) = 0, y(0) = 0.5]], linecolor = "Black");

  r0 := DEplot(diff(y(x), x, x)+4*sin(y(x)) = 0, y(x), x = 0 .. 10,
  [[(D(y))(0) = 0, y(0) = 0]], linecolor = "Red");
  r1 := DEplot(diff(y(x), x, x)+4*sin(y(x)) = 0, y(x), x = 0 .. 10,
  [[(D(y))(0) = 0, y(0) = 1]], linecolor = "GreenYellow");
  r2 := DEplot(diff(y(x), x, x)+4*sin(y(x)) = 0, y(x), x = 0 .. 10,
  [[(D(y))(0) = 0, y(0) = 2]], linecolor = "Purple");
  r3 := DEplot(diff(y(x), x, x)+4*sin(y(x)) = 0, y(x), x = 0 .. 10,
  [[(D(y))(0) = 0, y(0) = 3]], linecolor = "Blue");
  r4 := DEplot(diff(y(x), x, x)+4*sin(y(x)) = 0, y(x), x = 0 .. 10,
  [[(D(y))(0) = 0, y(0) = 3.14]], linecolor = "Black");
  r5 := DEplot(diff(y(x), x, x)+4*sin(y(x)) = 0, y(x), x = 0 .. 10,
  [[(D(y))(0) = 0, y(0) = Pi]], linecolor = "Orange");

  s0:=DEplot(diff(y(x), x, x)+4*sin(y(x)) = 0, y(x), x = 0 .. 10, [
  [(D(y))(0) = 0, y(0) = 0.1]],linecolor = "Red") ;
  s1:=DEplot(diff(y(x), x, x)+4*sin(y(x)) = 0, y(x), x = 0 .. 10, [
  [(D(y))(0) = 0, y(0) = 0.2]],linecolor = "GreenYellow") ;
  s2:=DEplot(diff(y(x), x, x)+4*sin(y(x)) = 0, y(x), x = 0 .. 10, [
  [(D(y))(0) = 0, y(0) = 0.3]],linecolor = "Purple") ;
  s3:=DEplot(diff(y(x), x, x)+4*sin(y(x)) = 0, y(x), x = 0 .. 10, [
  [(D(y))(0) = 0, y(0) = 0.4]],linecolor = "Blue") ;
  s4:=DEplot(diff(y(x), x, x)+4*sin(y(x)) = 0, y(x), x = 0 .. 10, [
  [(D(y))(0) = 0, y(0) = 0.5]],linecolor = "Black") ;

  z0:=DEplot(diff(y(x), x, x)+4*sin(y(x)) = 0, y(x), x = 0 .. 1, [[
  (D(y))(0) = 0, y(0) = Pi-0.01]],linecolor = "Red") ;
  z1:=DEplot(diff(y(x), x, x)+4*sin(y(x)) = 0, y(x), x = 0 .. 1, [[
  (D(y))(0) = 0, y(0) = Pi-0.1]],linecolor = "GreenYellow") ;
  z2:=DEplot(diff(y(x), x, x)+4*sin(y(x)) = 0, y(x), x = 0 .. 1, [[
  (D(y))(0) = 0, y(0) = Pi-1]],linecolor = "Purple") ;

  t0:=DEplot(diff(y(x), x, x)-4*y(x) = 0, y(x), x = 0 .. 1, [[(D(y)
```

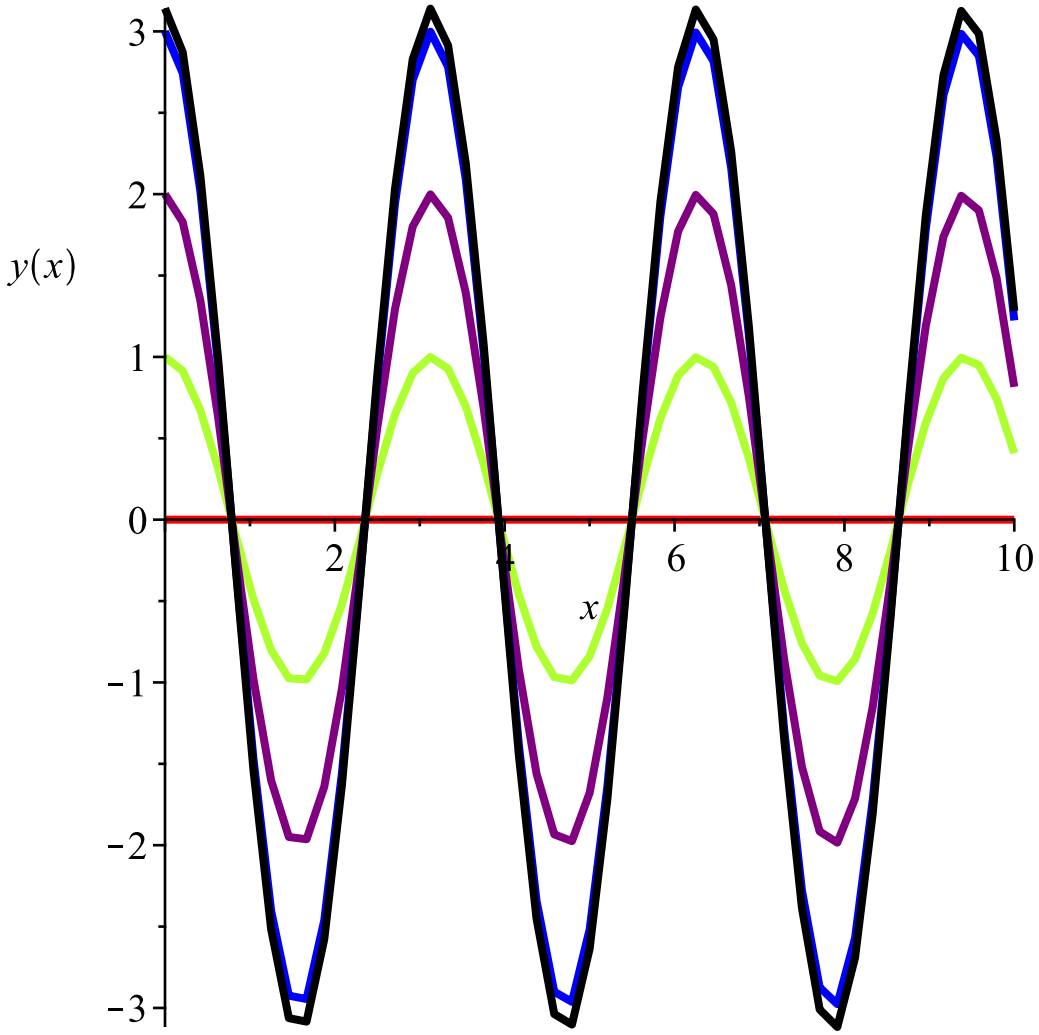
```
)(0) = 0, y(0) = -0.01]],linecolor = "Red") ;
t1:=DEplot(diff(y(x), x, x)-4*y(x) = 0, y(x), x = 0 .. 1, [[(D(y)
)(0) = 0, y(0) = -0.1]],linecolor = "GreenYellow") ;
t2:=DEplot(diff(y(x), x, x)-4*y(x) = 0, y(x), x = 0 .. 1, [[(D(y)
)(0) = 0, y(0) = -1]],linecolor = "Purple") ;

v0:=DEplot(diff(y(x), x, x)-4*sin(y(x)) = 0.2*cos(1*x), y(x), x =
0 .. 20, [[(D(y))(0) = 0, y(0) = 0]],linecolor = "Red") ;
w0:=DEplot(diff(y(x), x, x)-4*y(x) = 0.2*cos(1*x), y(x), x = 0 ..
20, [[(D(y))(0) = 0, y(0) = 1]],linecolor = "Red") ;
x0:=DEplot(diff(y(x), x, x)-4*sin(y(x)) = 0.2*cos(1*x), y(x), x =
0 .. 20, [[(D(y))(0) = 0, y(0) = 1]],linecolor = "Red") ;
v1:=DEplot(diff(y(x), x, x)-4*sin(y(x)) = 0.2*cos(2*x), y(x), x =
0 .. 20, [[(D(y))(0) = 0, y(0) = 0]],linecolor = "GreenYellow") ;
w1:=DEplot(diff(y(x), x, x)-4*y(x) = 0.2*cos(2*x), y(x), x = 0 ..
20, [[(D(y))(0) = 0, y(0) = 1]],linecolor = "GreenYellow") ;
x1:=DEplot(diff(y(x), x, x)-4*sin(y(x)) = 0.2*cos(2*x), y(x), x =
0 .. 20, [[(D(y))(0) = 0, y(0) = 1]],linecolor = "GreenYellow") ;
v2:=DEplot(diff(y(x), x, x)-4*sin(y(x)) = 0.2*cos(3*x), y(x), x =
0 .. 20, [[(D(y))(0) = 0, y(0) = 0]],linecolor = "Purple") ;
w2:=DEplot(diff(y(x), x, x)-4*y(x) = 0.2*cos(3*x), y(x), x = 0 ..
20, [[(D(y))(0) = 0, y(0) = 1]],linecolor = "Purple") ;
x2:=DEplot(diff(y(x), x, x)-4*sin(y(x)) = 0.2*cos(3*x), y(x), x =
0 .. 20, [[(D(y))(0) = 0, y(0) = 1]],linecolor = "Purple") ;

disp("real plots begin now ");
display(p0,p1,p2,p3,p4);
display(q0,q1,q2,q3,q4);
display(r0,r1,r2,r3,r4,r5);
display(s0,s1,s2,s3,s4);
display(z0,z1,z2);
display(t0,t1,t2);
display(v0,v1,v2);
display(w0,w1,w2);
display(x0,x1,x2);
```

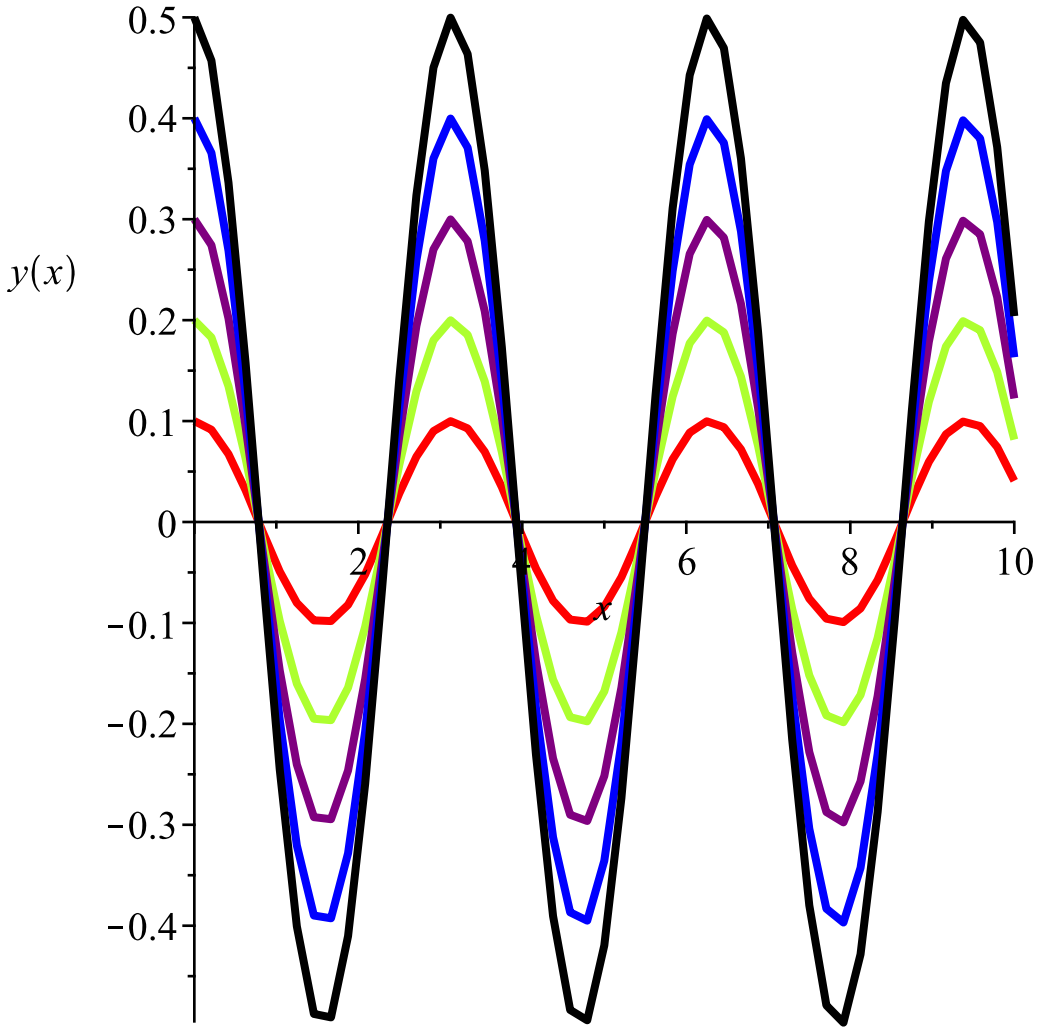
[*AreSimilar*, *Closure*, *DEnormal*, *DEplot*, *DEplot3d*, *DEplot_polygon*, *DFactor*, *DFactorLCLM*, *DFactorsols*, *Dchangevar*, *Desingularize*, *FunctionDecomposition*, *GCRD*, *Gosper*, *Heunsols*, *Homomorphisms*, *IVPsol*, *IsHyperexponential*, *LCLM*, *MeijerGsols*, *MultiplicativeDecomposition*, *ODEInvariants*, *PDEchangecoords*, *PolynomialNormalForm*, *RationalCanonicalForm*, *ReduceHyperexp*, *RiemannPsols*, *Xchange*, *Xcommutator*, *Xgauge*, *Zeilberger*, *abelsol*, *adjoint*, *autonomous*, *bernoullisol*, *buildsol*, *buildsym*, *canoni*, *caseplot*, *casesplit*, *checkrank*, *chinisol*, *clairautsol*, *constcoeffsols*, *convertAlg*, *convertsys*, *dalembertsol*, *dcoeffs*, *de2diffop*, *dfieldplot*, *diff_table*, *diffop2de*, *dperiodic_sols*, *dpolyform*, *dsubs*, *eigenring*, *endomorphism_charpoly*, *equinv*, *eta_k*, *eulersols*, *exactsol*, *expsols*, *exterior_power*, *firint*, *firtest*, *formal_sol*, *gen_exp*, *generate_ic*, *genhomosol*, *gensys*, *hamilton_eqs*, *hypergeomsols*, *hyperode*, *indicialeq*, *infgen*, *initialdata*, *integrate_sols*, *intfactor*, *invariants*, *kovacicsols*, *leftdivision*, *liesol*, *line_int*, *linearsol*, *matrixDE*, *matrix_riccati*, *maxdimsystems*, *moser_reduce*, *muchange*, *mult*, *mutest*, *newton_polygon*, *normalG2*, *ode_int_y*, *ode_y1*, *odeadvisor*, *odepde*, *parametricsol*, *particularsol*, *phaseportrait*, *poincare*, *polysols*, *power_equivalent*, *rational_equivalent*, *ratsols*, *redode*,

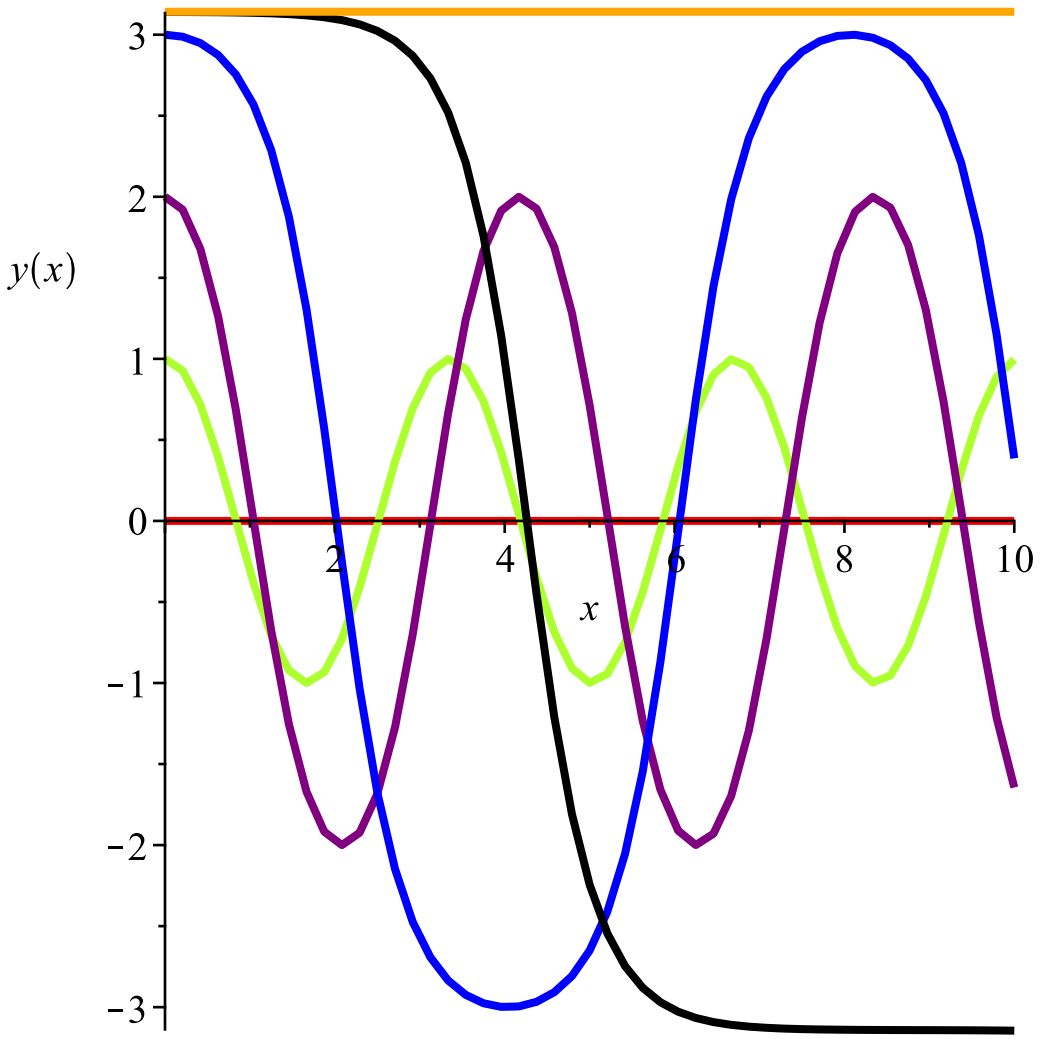
*reduceOrder*, *reduce_order*, *regular_parts*, *regularsp*, *remove_RootOf*, *riccati_system*, *riccatisol*, *rifread*, *rifsimp*, *rightdivision*, *rtaylor*, *separablesol*, *singularities*, *solve_group*, *super_reduce*, *symgen*, *symmetric_power*, *symmetric_product*, *symtest*, *transinv*, *translate*, *untranslate*, *varparam*, *zoom*]

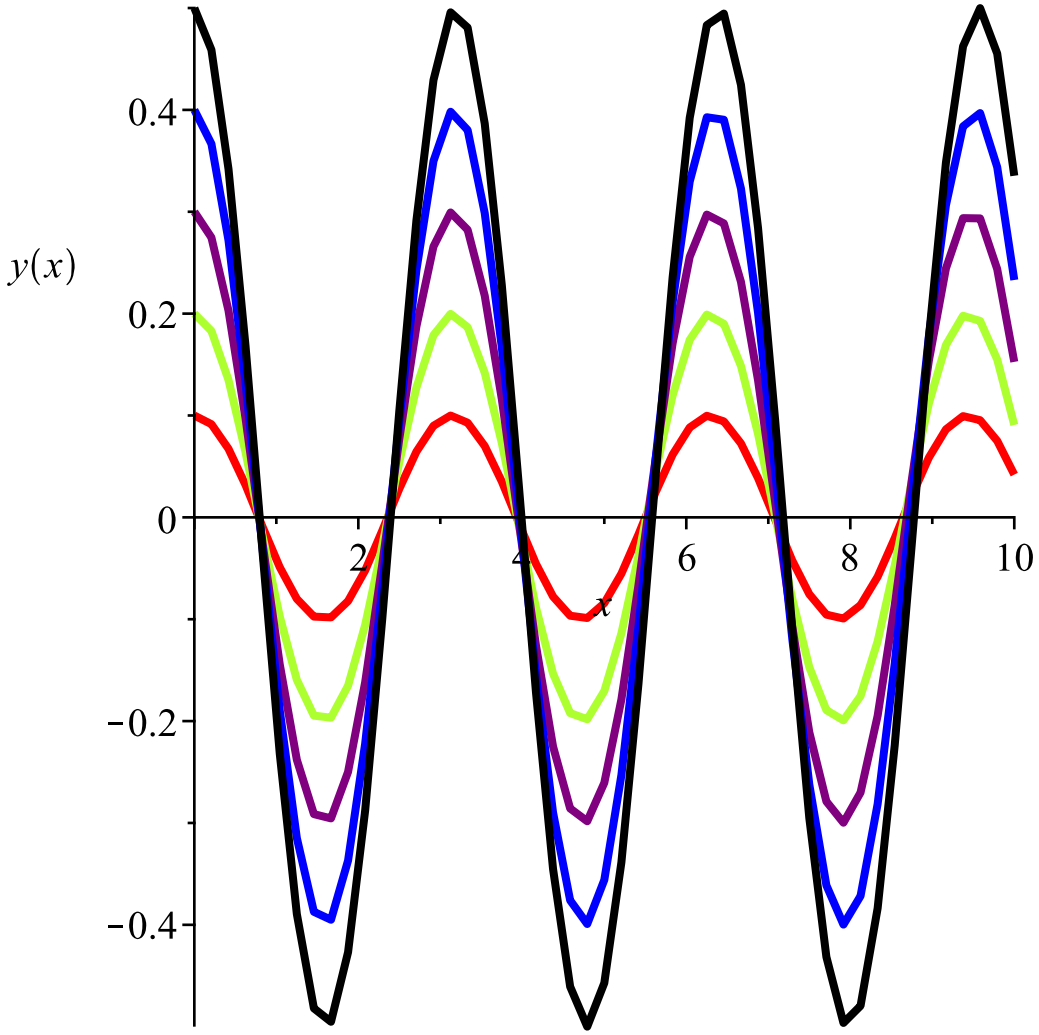
[*animate*, *animate3d*, *animatecurve*, *arrow*, *changecoords*, *complexplot*, *complexplot3d*, *conformal*, *conformal3d*, *contourplot*, *contourplot3d*, *coordplot*, *coordplot3d*, *densityplot*, *display*, *dualaxisplot*, *fieldplot*, *fieldplot3d*, *gradplot*, *gradplot3d*, *implicitplot*, *implicitplot3d*, *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*, *shadebetween*, *spacecurve*, *sparsematrixplot*, *surfdata*, *textplot*, *textplot3d*, *tubeplot*]

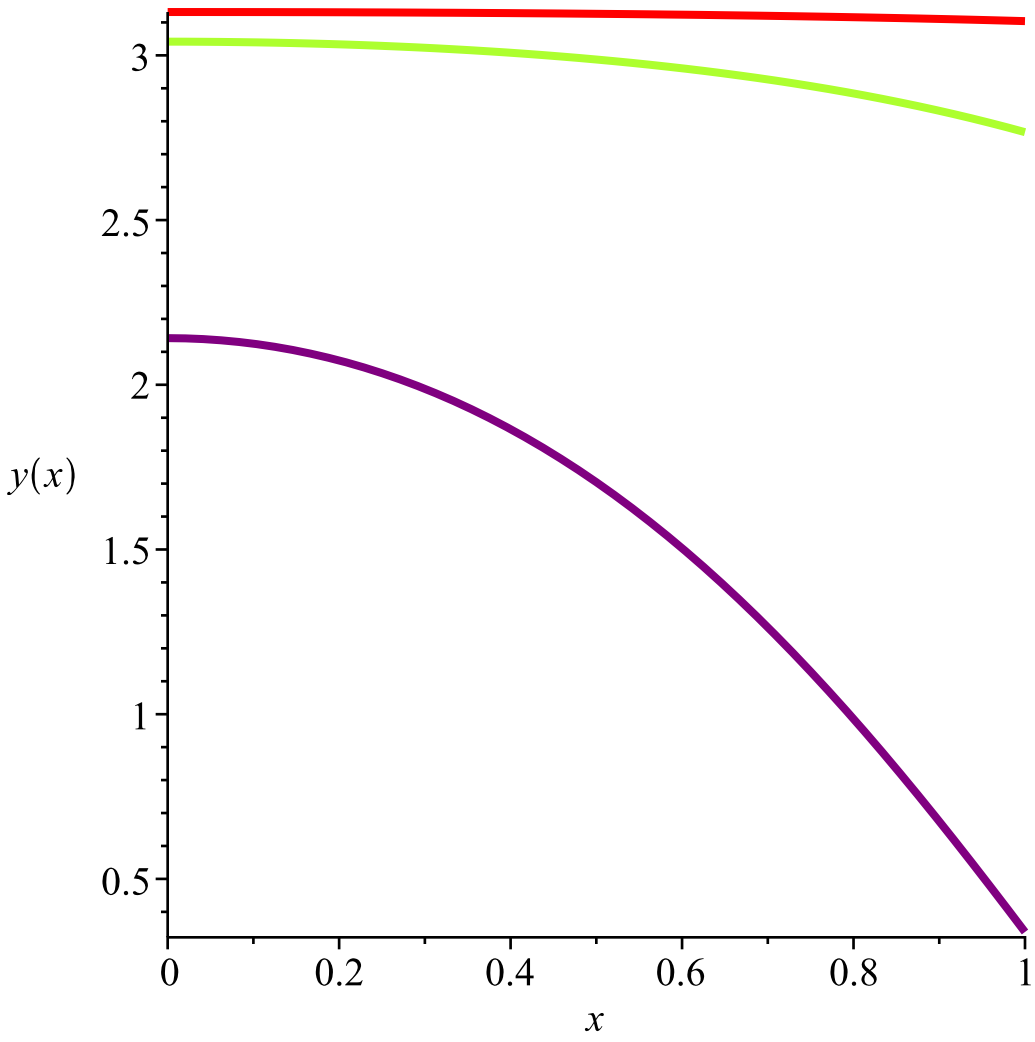
*disp*("real plots begin now ")

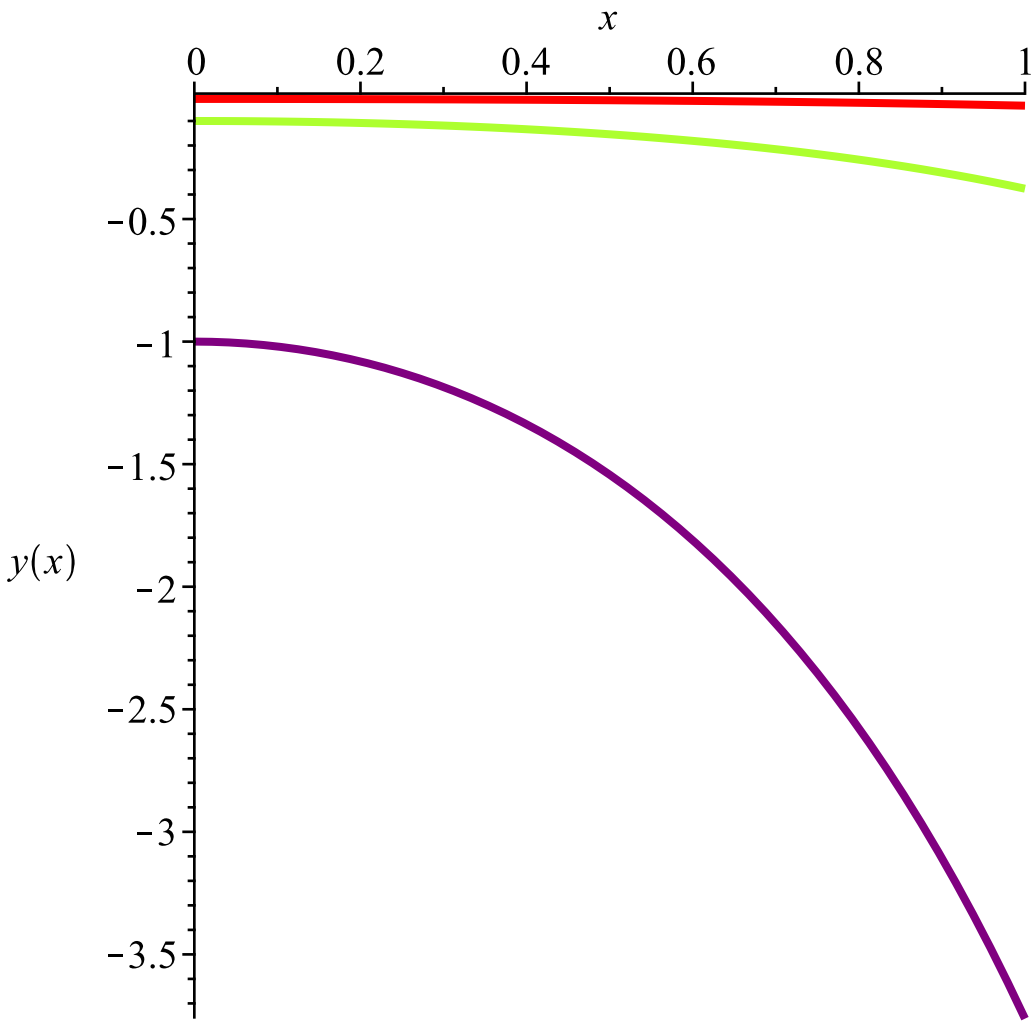


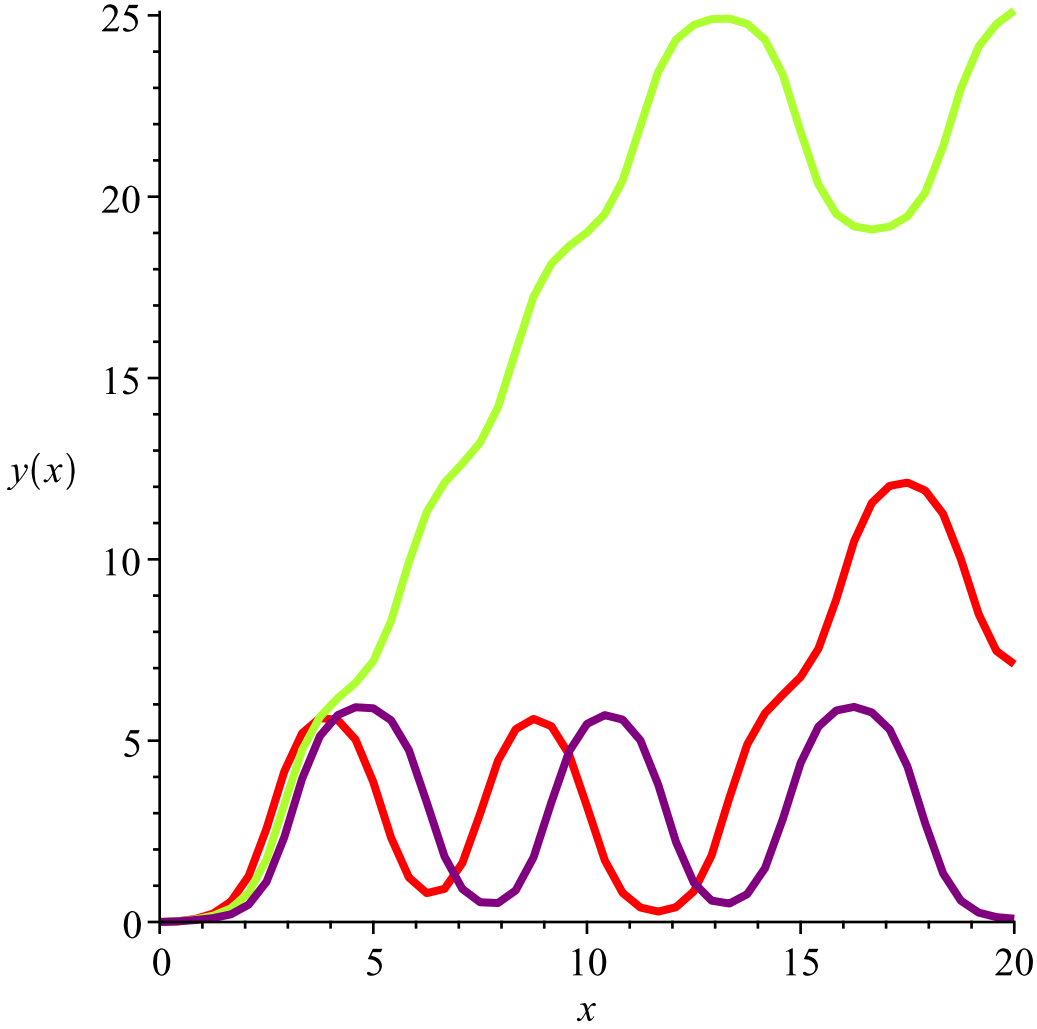

0.5
0.4
0.3
0.2
0.1
0
−0.1
−0.2
−0.3
−0.4
y(x)
2
4
6
8
10
x

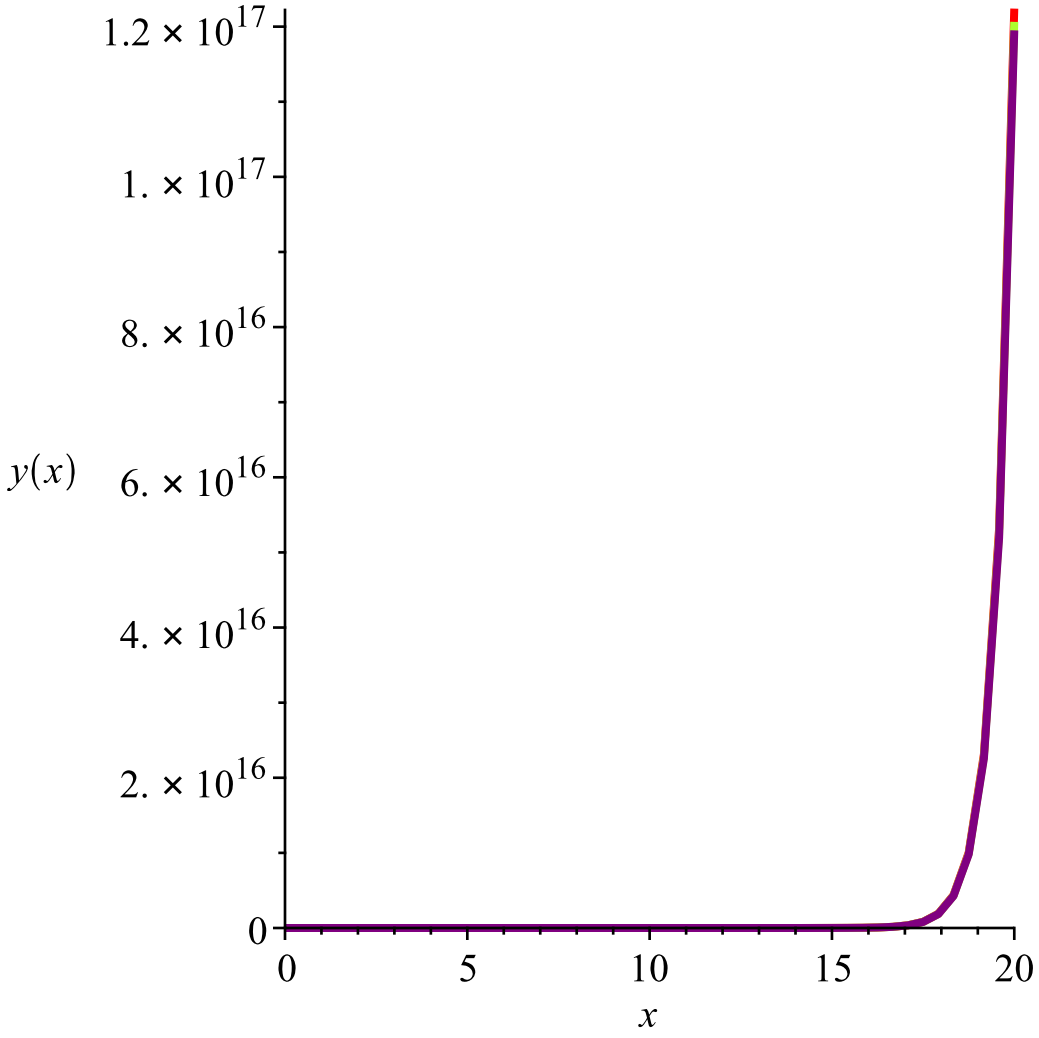

y(x)
x
3
2
1
0
−1
−2
−3
2
4
6
8
10

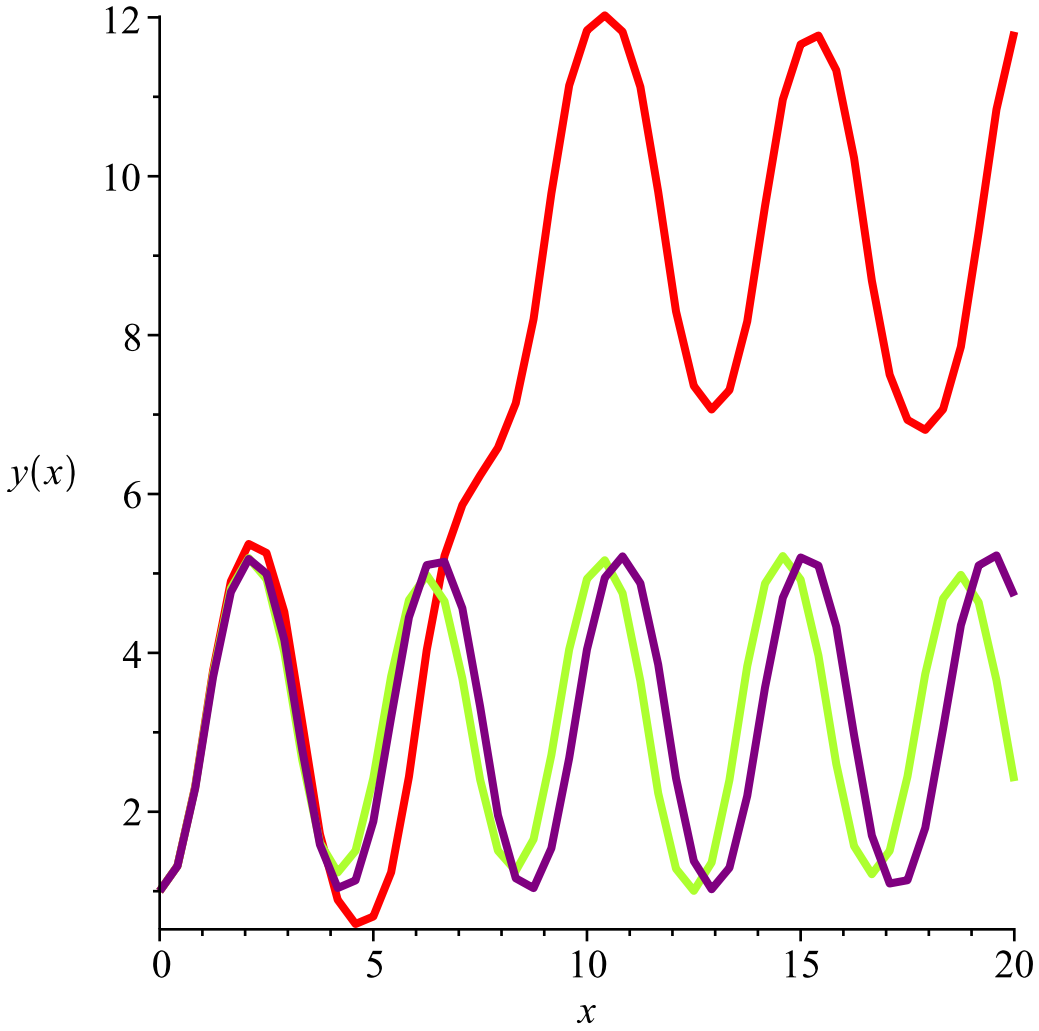

y(x)
0.4
0.2
0
-0.2
-0.4
2
4
6
8
10
x


3
2.5
2
1.5
1
0.5
y(x)
0
0.2
0.4
0.6
0.8
1
x

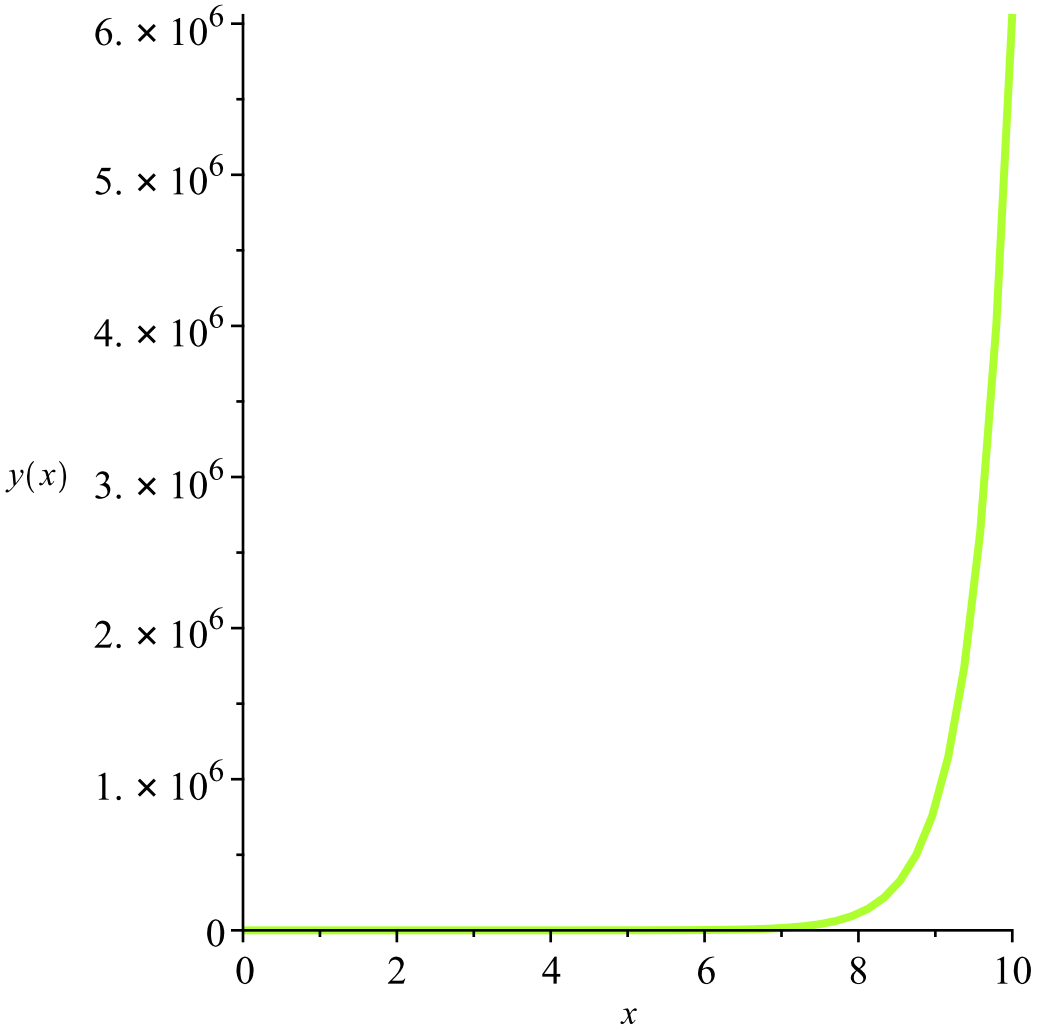

x
0
0.2
0.4
0.6
0.8
1
y(x)
-0.5
-1
-1.5
-2
-2.5
-3
-3.5


25
20
15
10
5
0
y(x)
0
5
10
15
20
x

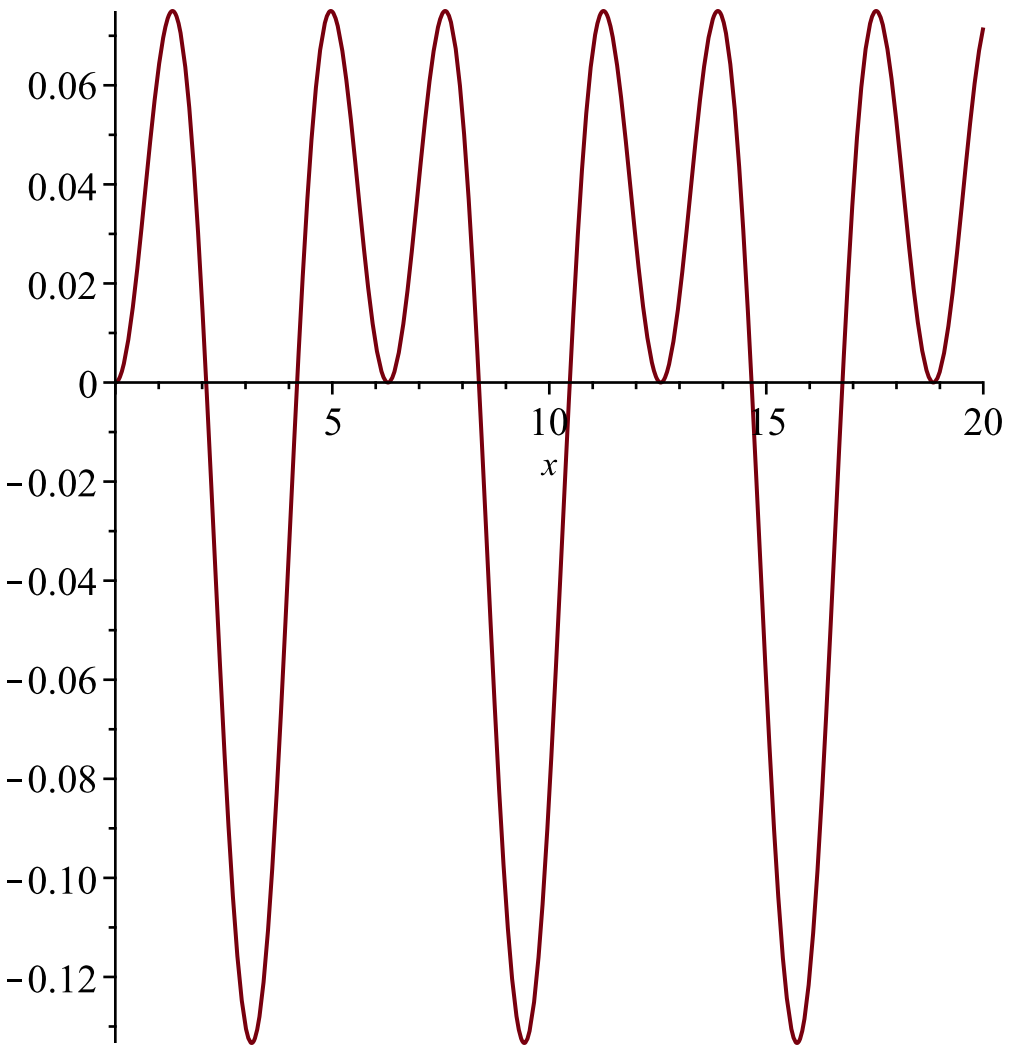

1.2 × 10^17
1. × 10^17
8. × 10^16
6. × 10^16
4. × 10^16
2. × 10^16
0
y(x)
0
5
10
15
20
x



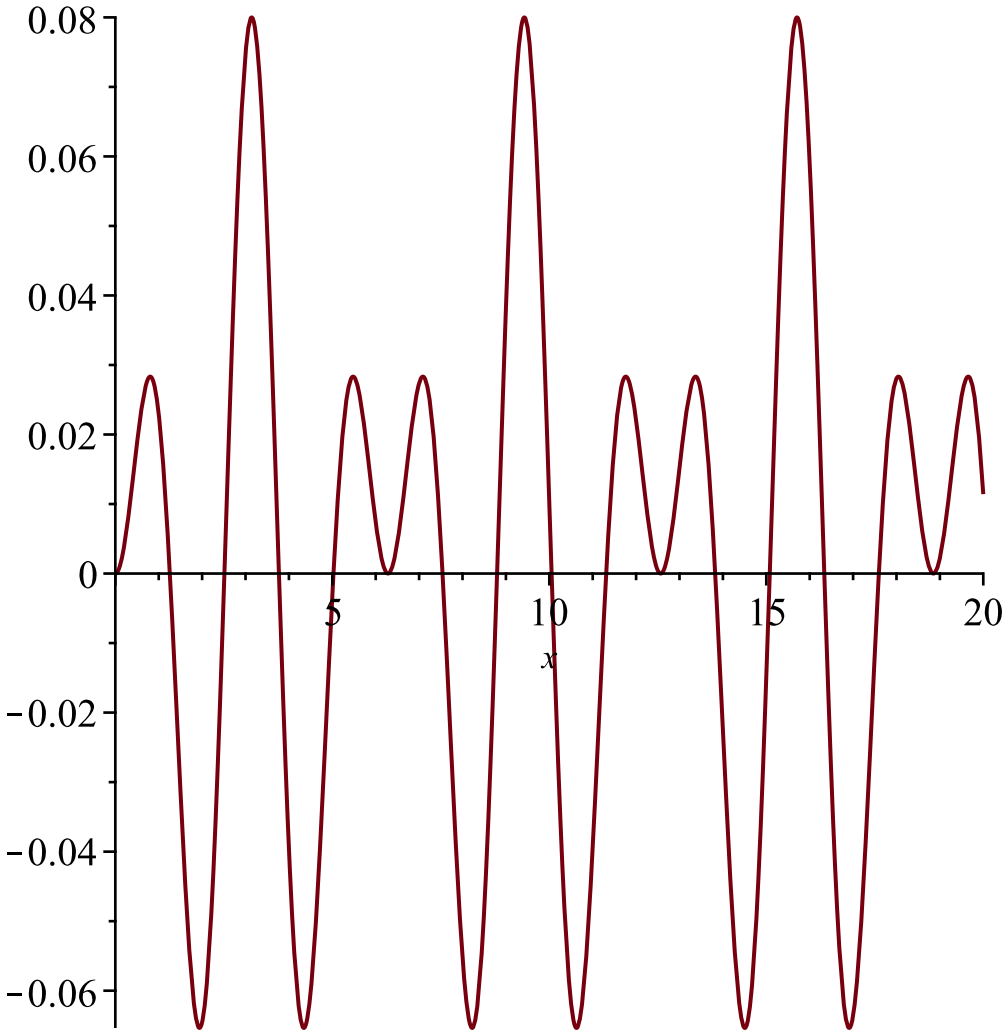

```
> u1 := DEplot(diff(y(x), x, x) - 4 * y(x) = 0.2 * cos(2 * x), y(x), x = 0 .. 10, [[(D(y))(0) = 0,
      y(0) = 0]], linecolor = "GreenYellow") ;
```



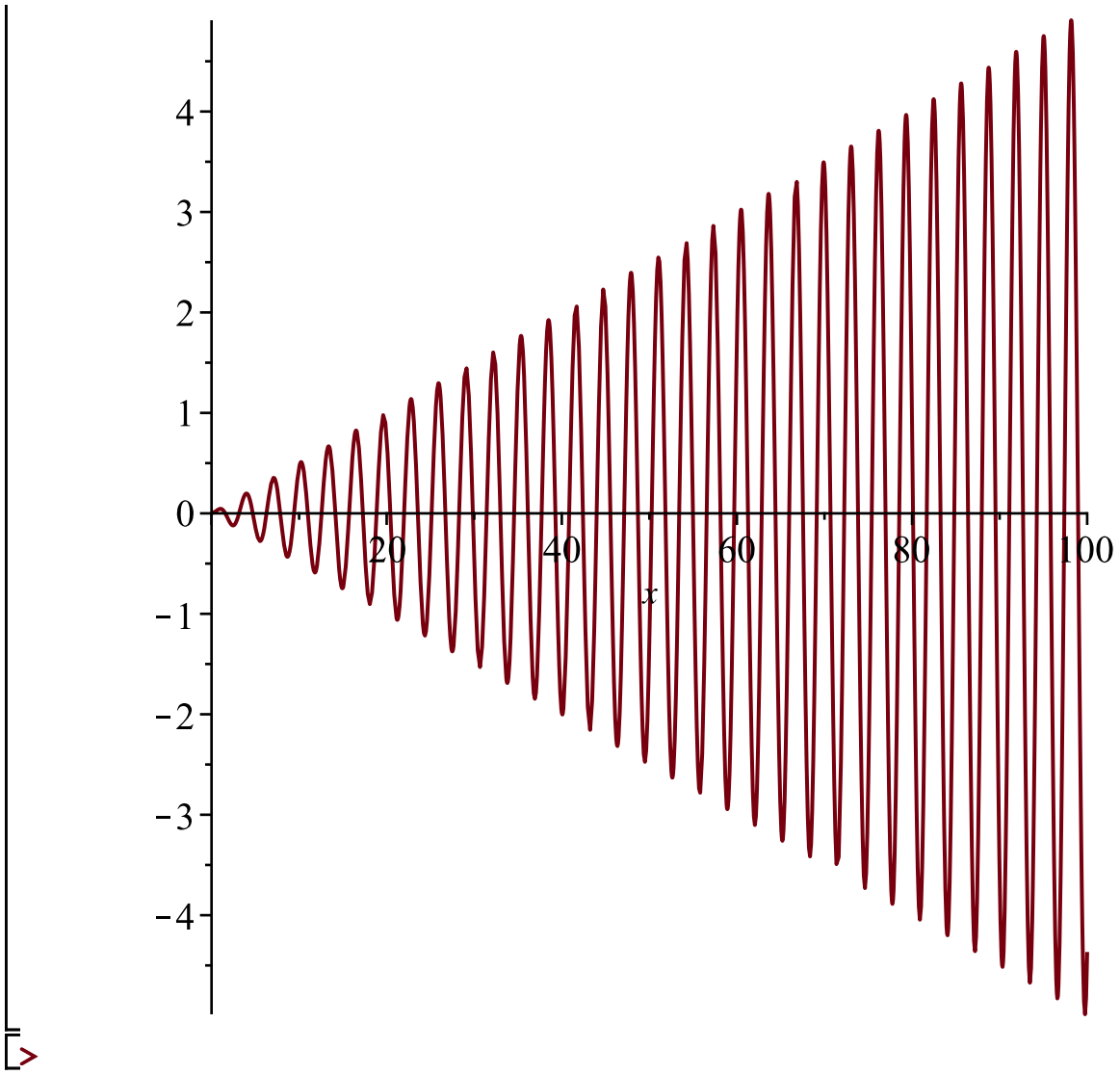

> $plot\left(\frac{0.2}{4-1}\cdot(\cos(1\cdot x)-\cos(2\cdot x)),x=0..20\right)$




> $plot\left(\frac{0.2}{4-9}\cdot(\cos(3\cdot x)-\cos(2\cdot x)),x=0..20\right)$




> $plot\left(\frac{0.2}{4}\cdot x\cdot\sin(2\cdot x), x=0..100\right)$


4
3
2
1
0
-1
-2
-3
-4
20
40
60
80
100
x