```
> restart:
>
> Y:=dsolve(x*diff(y(x),x)+(3+x)*y(x)-x^2*cos(x)=0,y(x));
```

$$Y := y(x) = \left(\frac{1}{2}x^4\,\mathbf{e}^x\cos(x) - 3\,\mathbf{e}^x\cos(x)\,x^2 + 6\,\mathbf{e}^x\cos(x)\,x - 3\,\mathbf{e}^x\cos(x) + \frac{1}{2}\mathbf{e}^x\sin(x)\,x^4 - 2\,\mathbf{e}^x\sin(x)\,x^3 + 3\,\mathbf{e}^x\sin(x)\,x^2 - 3\,\mathbf{e}^x\sin(x) + \_C1\right)\mathbf{e}^{(-x)} \Big/ x^3$$

```
> A:=rhs(Y);
```

$$A := \left(\frac{1}{2}x^4\,\mathbf{e}^x\cos(x) - 3\,\mathbf{e}^x\cos(x)\,x^2 + 6\,\mathbf{e}^x\cos(x)\,x - 3\,\mathbf{e}^x\cos(x) + \frac{1}{2}\mathbf{e}^x\sin(x)\,x^4 - 2\,\mathbf{e}^x\sin(x)\,x^3 + 3\,\mathbf{e}^x\sin(x)\,x^2 - 3\,\mathbf{e}^x\sin(x) + \_C1\right)\mathbf{e}^{(-x)} \Big/ x^3$$

```
> f:=unapply(A,x);
```

$$f := x \to \left(\frac{1}{2}x^4\,\mathbf{e}^x\cos(x) - 3\,\mathbf{e}^x\cos(x)\,x^2 + 6\,\mathbf{e}^x\cos(x)\,x - 3\,\mathbf{e}^x\cos(x) + \frac{1}{2}\mathbf{e}^x\sin(x)\,x^4 - 2\,\mathbf{e}^x\sin(x)\,x^3 + 3\,\mathbf{e}^x\sin(x)\,x^2 - 3\,\mathbf{e}^x\sin(x) + \_C1\right)\mathbf{e}^{(-x)} \Big/ x^3$$

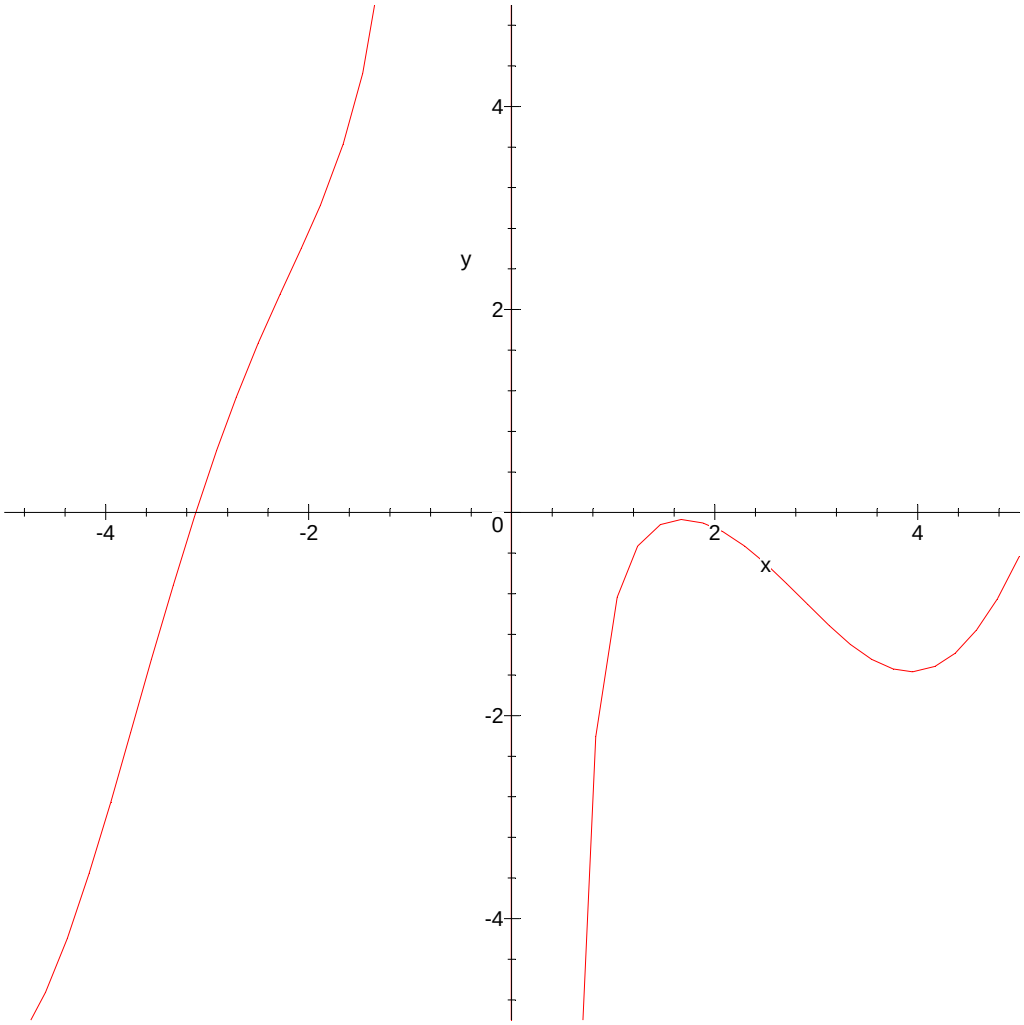
```
>

> with(plots);
```

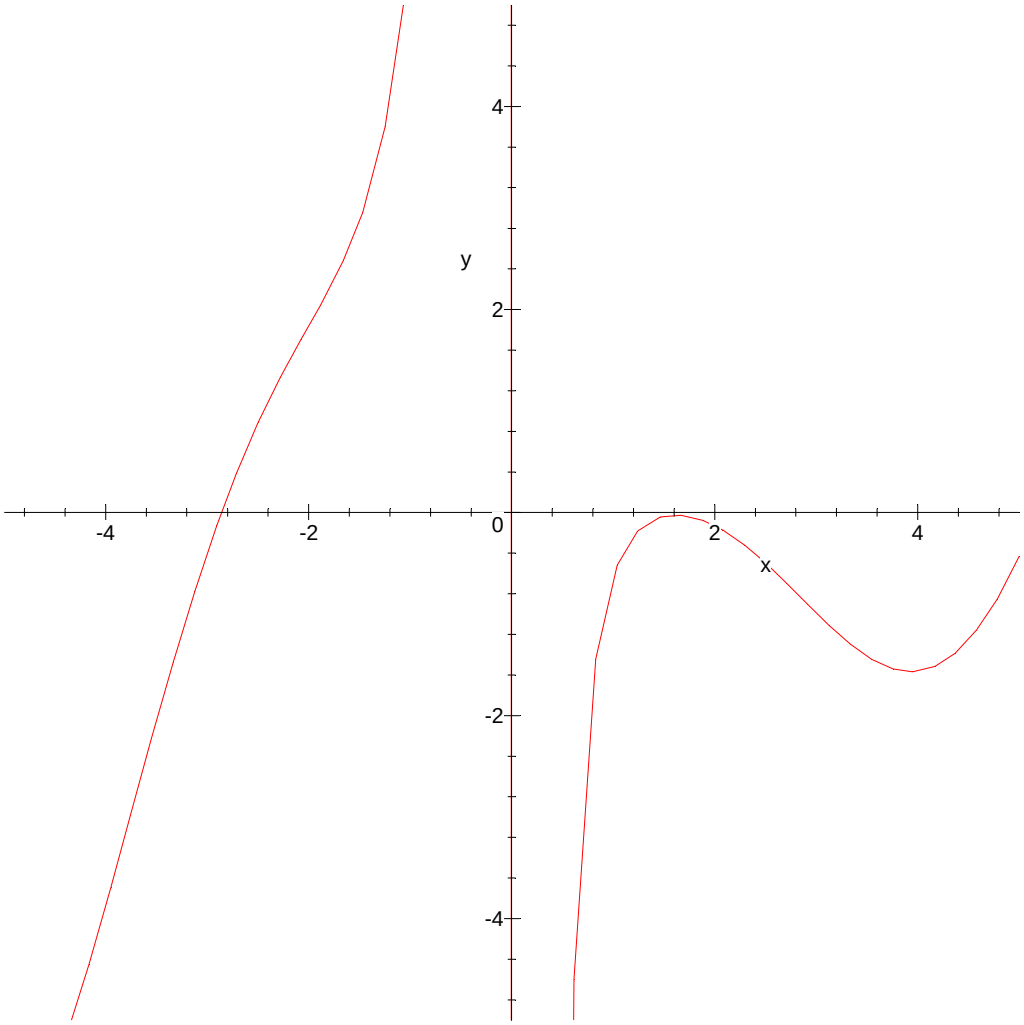
[*animate*, *animate3d*, *changecoords*, *complexplot*, *complexplot3d*, *conformal*, *contourplot*, *contourplot3d*, *coordplot*, *coordplot3d*, *cylinderplot*, *densityplot*, *display*, *display3d*, *fieldplot*, *fieldplot3d*, *gradplot*, *gradplot3d*, *implicitplot*, *implicitplot3d*, *inequal*, *listcontplot*, *listcontplot3d*, *listdensityplot*, *listplot*, *listplot3d*, *loglogplot*, *logplot*, *matrixplot*, *odeplot*, *pareto*, *pointplot*, *pointplot3d*, *polarplot*, *polygonplot*, *polygonplot3d*, *polyhedraplot*, *replot*, *rootlocus*, *semilogplot*, *setoptions*, *setoptions3d*, *spacecurve*, *sparsematrixplot*, *sphereplot*, *surfdata*, *textplot*, *textplot3d*, *tubeplot*]

```
>
> for i from 0 to 5 do
  _C1:=i:
  plot(f(x),x=-5..5,y=-5..5);
   od;
```

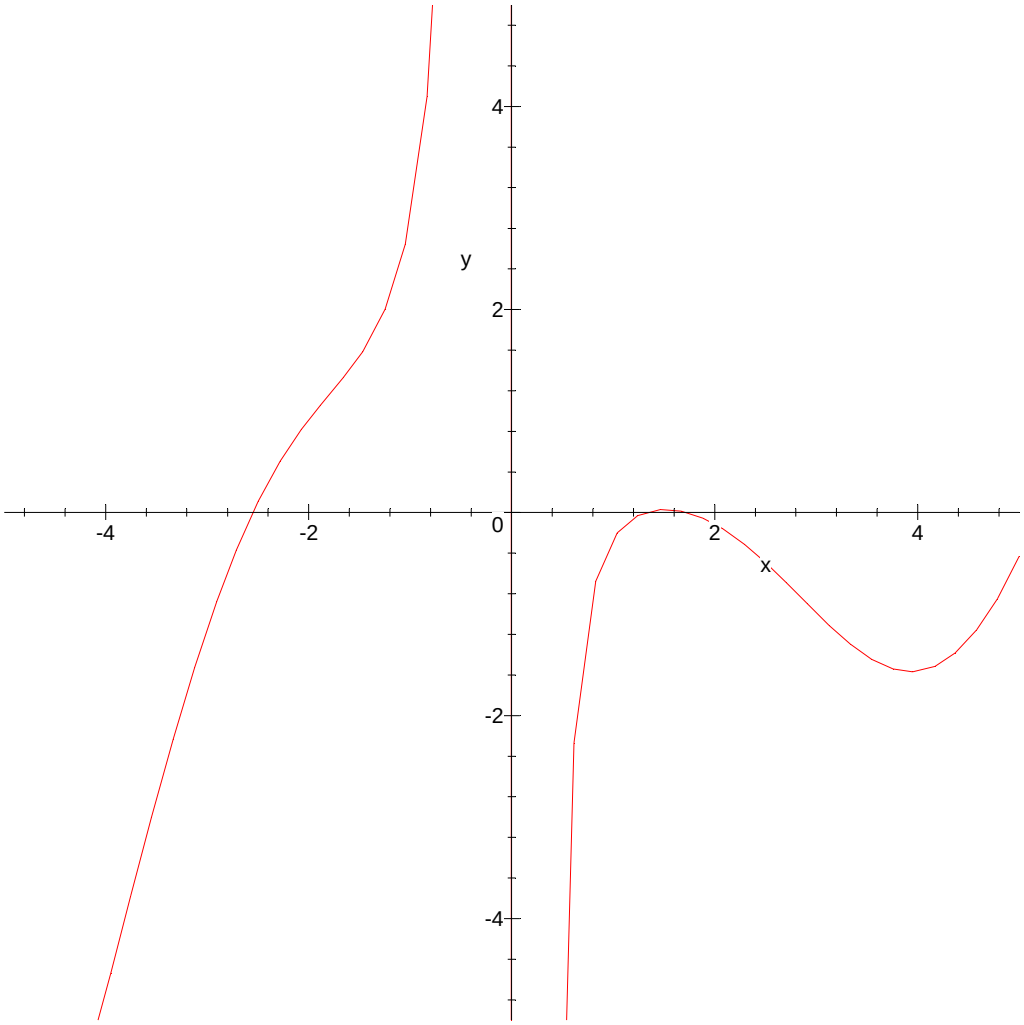
$$\_C1 := 0$$



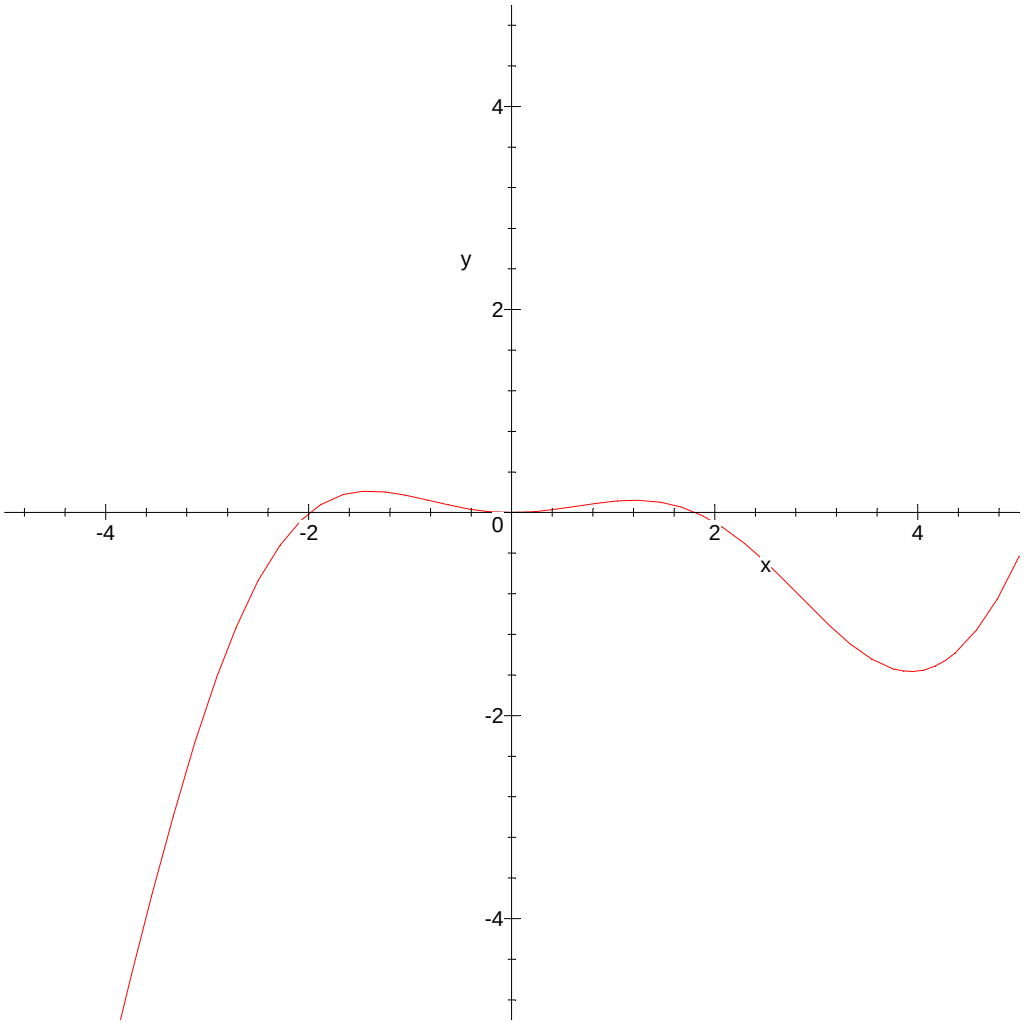
$$_C1 := 1$$



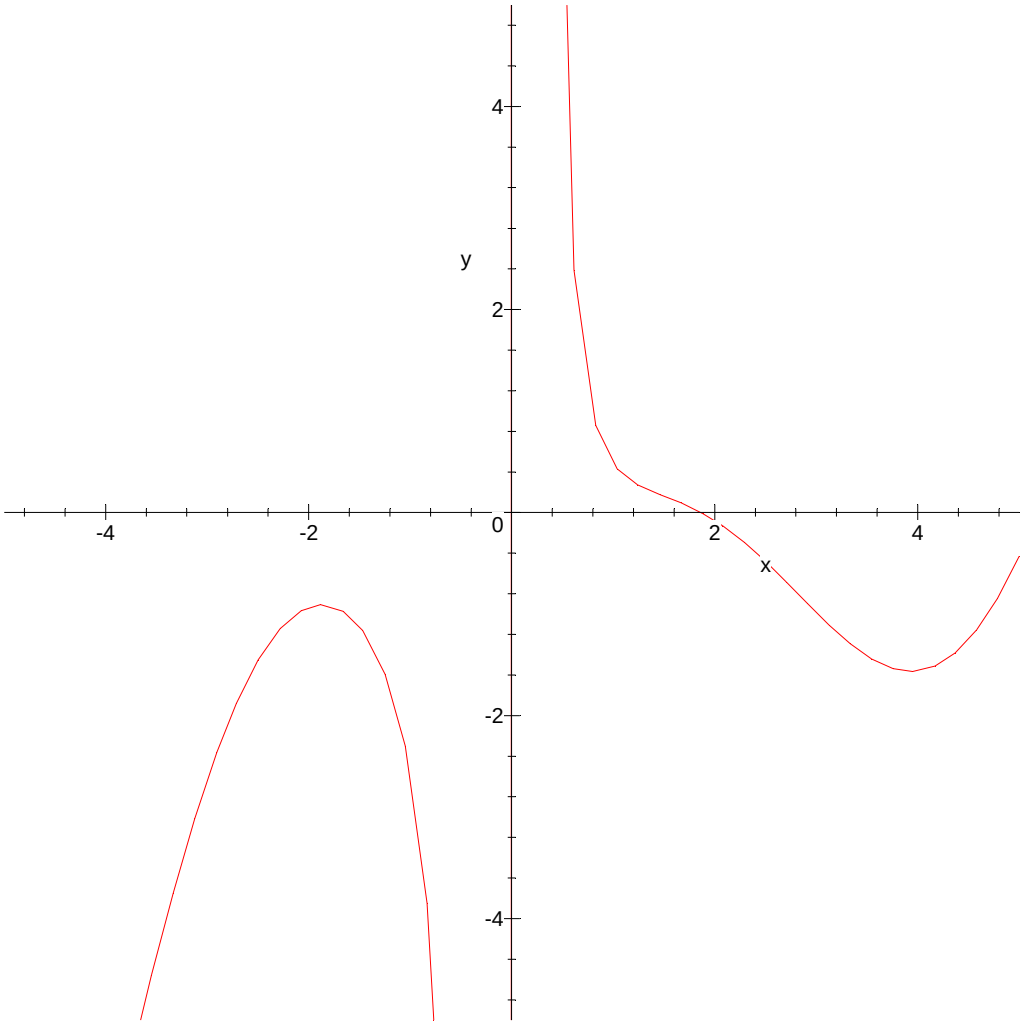
$$_C1 := 2$$



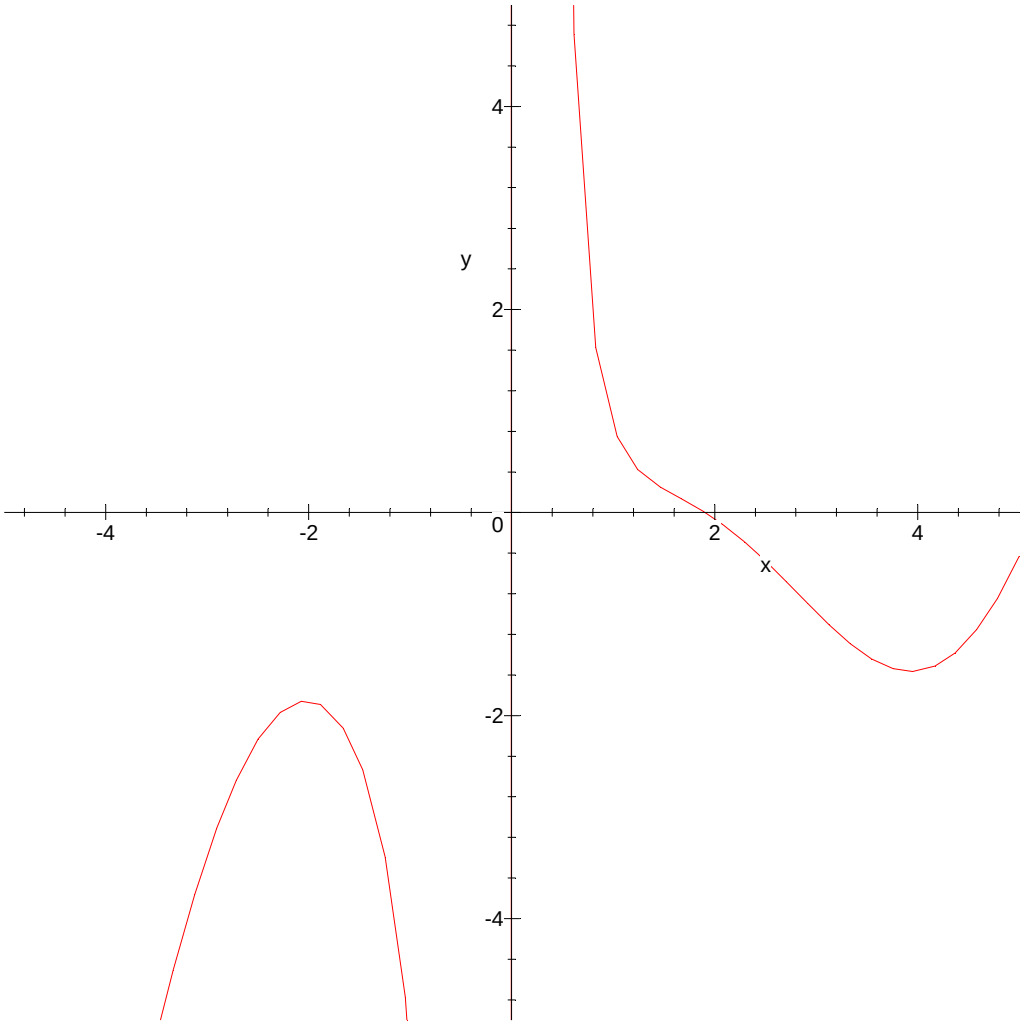
$$_C1 := 3$$



$$_C1 := 4$$



$$_C1 := 5$$




```
> subs(_C1=3,f(x));
```

$$\left(\frac{1}{2}x^4\,\mathbf{e}^x\cos(x) - 3\,\mathbf{e}^x\cos(x)\,x^2 + 6\,\mathbf{e}^x\cos(x)\,x - 3\,\mathbf{e}^x\cos(x) + \frac{1}{2}\mathbf{e}^x\sin(x)\,x^4 - 2\,\mathbf{e}^x\sin(x)\,x^3 + 3\,\mathbf{e}^x\sin(x)\,x^2 - 3\,\mathbf{e}^x\sin(x) + 3\right)\mathbf{e}^{(-x)} \Big/ x^3$$

```
>
>
```