

Campi direzionali

- Note

- Autore

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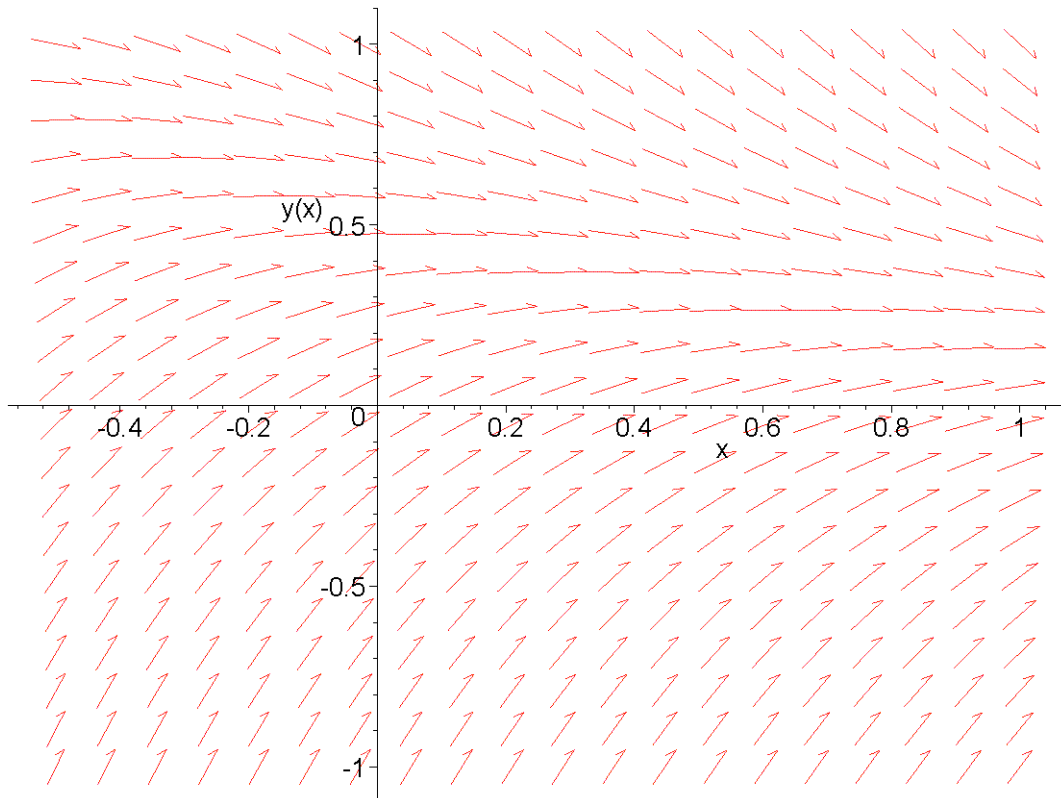
- Versione

Versione 2.0, 16 marzo 2003
Maple V Release 6.02 for Windows 2000

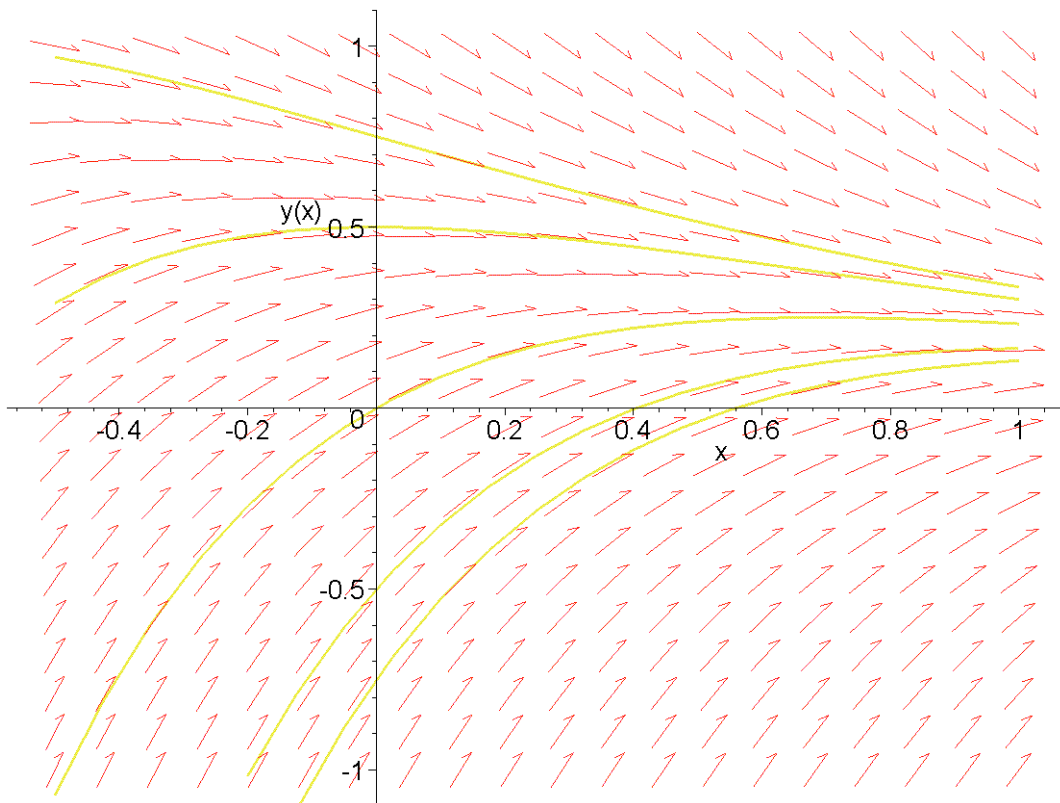
```
> restart;  
> with(DEtools);  
> eqdiff := diff(y(x), x) = exp(-x) - 2*y(x);
```

$$eqdiff := \frac{\partial}{\partial x} y(x) = e^{-x} - 2y(x)$$

```
> DEplot(eqdiff, y(x), x=-0.5..1, y=-1..1);
```



```
> valori_iniziali := [0,0.75], [0,0.5], [0,0], [0, -0.5],  
[0,-0.75];  
valori_iniziali := [0, .75], [0, .5], [0, 0], [0, -.5], [0, -.75]  
> DEplot(eqdiff, y(x), x=-0.5..1, {valori_iniziali}, y=-1..1);
```



```
> dsolve(eqdiff, y(x));
```

$$y(x) = (e^x + _C1) e^{(-2x)}$$

Un altro esempio:

```
> restart: with(DEtools):
```

```
> eqdiff := diff(y(x), x) = (x^2 + y(x)^2)/10;
```

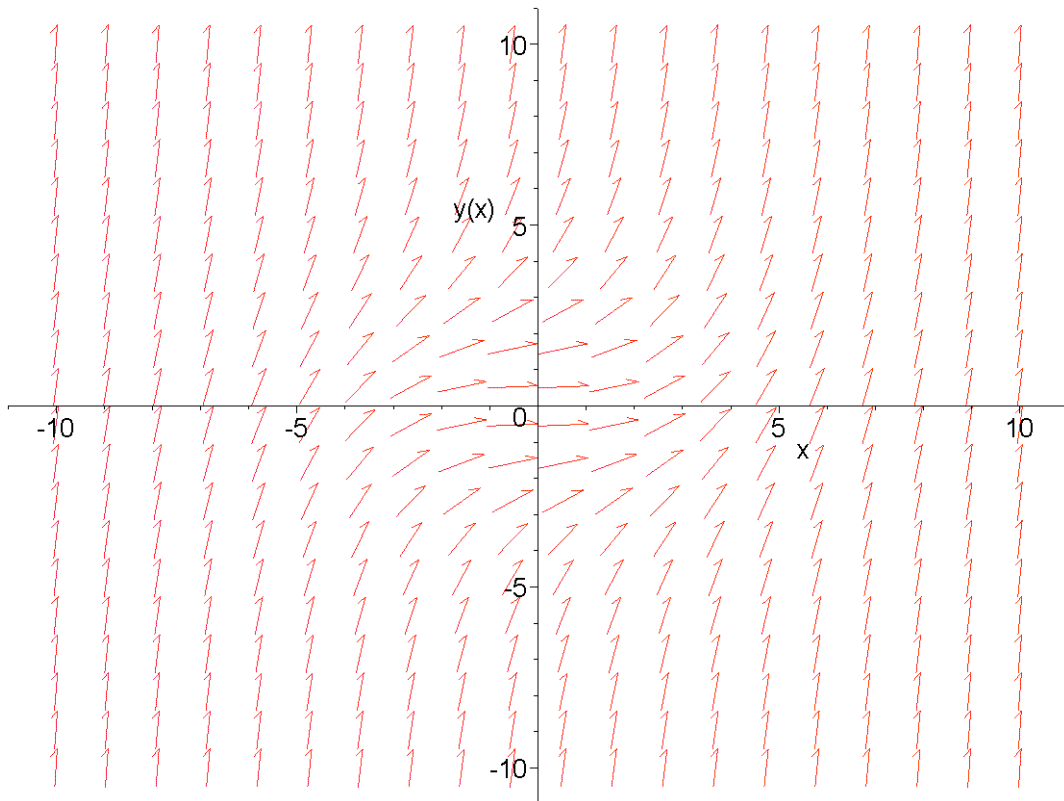
$$eqdiff := \frac{\partial}{\partial x} y(x) = \frac{1}{10} x^2 + \frac{1}{10} y(x)^2$$

```
> dsolve(eqdiff, y(x));
```

$$y(x) = - \frac{x \left(_C1 \operatorname{BesselJ} \left(\frac{-3}{4}, \frac{1}{20} x^2 \right) + \operatorname{BesselY} \left(\frac{-3}{4}, \frac{1}{20} x^2 \right) \right)}{_C1 \operatorname{BesselJ} \left(\frac{1}{4}, \frac{1}{20} x^2 \right) + \operatorname{BesselY} \left(\frac{1}{4}, \frac{1}{20} x^2 \right)}$$

La soluzione sopra è troppo complicata!

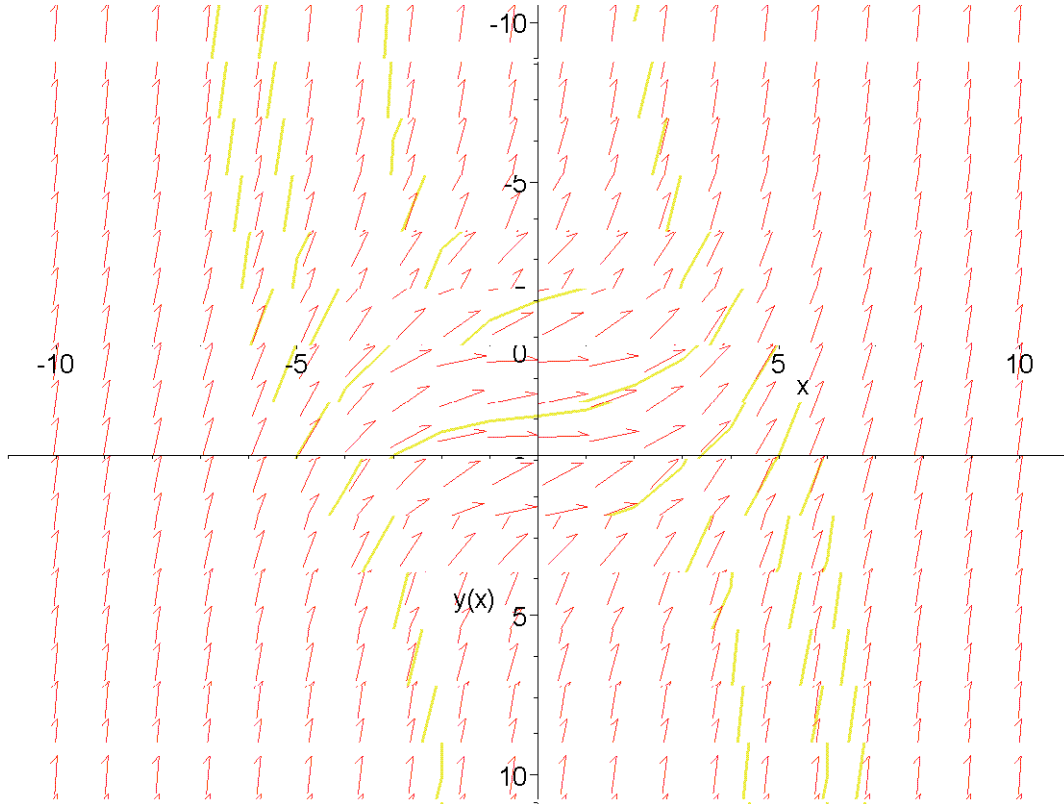
```
> DEplot(eqdiff, y(x), x=-10..10, y=-10..10);
```



```
> valori_iniziali := [-5,0], [-3,0], [0, -2], [5,0];
```

```
valori_iniziali := [-5,0], [-3,0], [0, -2], [5,0]
```

```
> DEplot(eqdiff, y(x), x=-10..10, {valori_iniziali}, y=-10..10);
```



Ancora un esempio

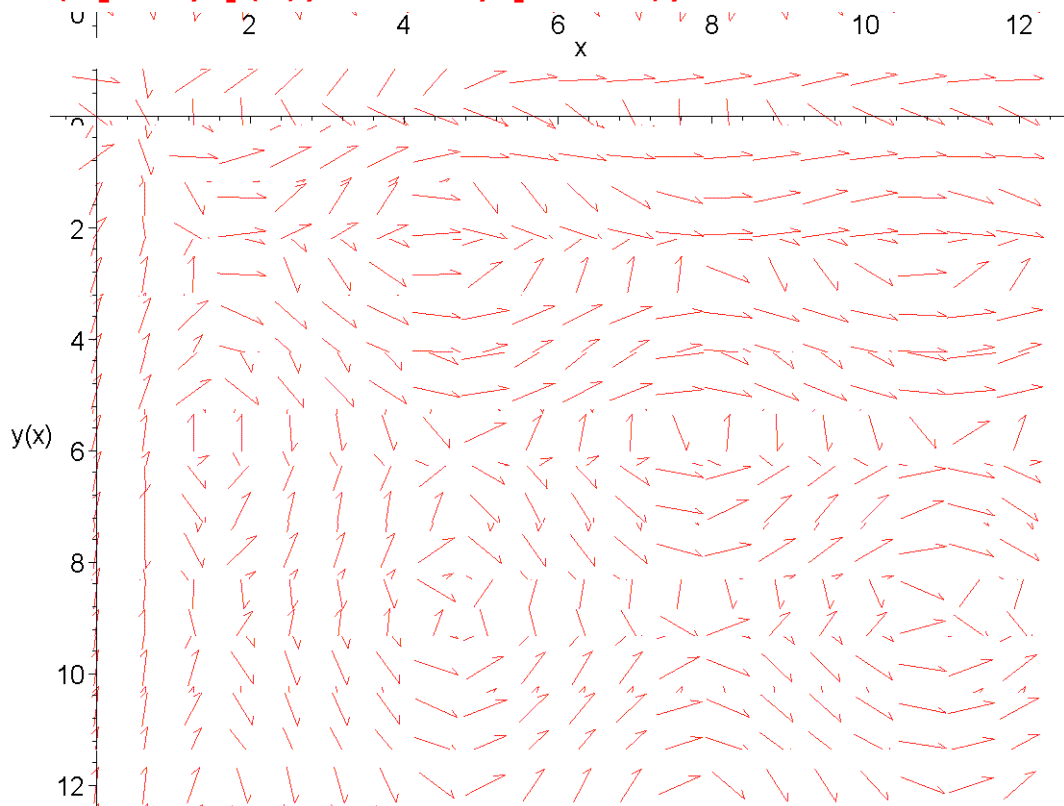
```
> restart:
```

```
> with(DEtools):
```

```
> eqdiff := diff(y(x), x) = (cos(y(x)) - y(x)*cos(x))/(x*sin(y(x))  
+ sin(x)-1);
```

$$eqdiff := \frac{\partial}{\partial x} y(x) = \frac{\cos(y(x)) - y(x) \cos(x)}{x \sin(y(x)) + \sin(x) - 1}$$

```
> DEplot(eqdiff, y(x), x=0..12, y=0..12);
```



```
> valori_iniziali := [5, 6], [2, 0];
```

```
valori_iniziali := [5, 6], [2, 0]
```

```
> DEplot(eqdiff, y(x), x=0..12, {valori_iniziali}, y=0..12);
```

