```
> d1 := diff(x(t), t) = 0.8·x(t) − 0.5·x(t)·y(t)
```

$$d1 := \frac{d}{dt}\,x(t) = 0.8\,x(t) - 0.5\,x(t)\,y(t) \qquad (1)$$

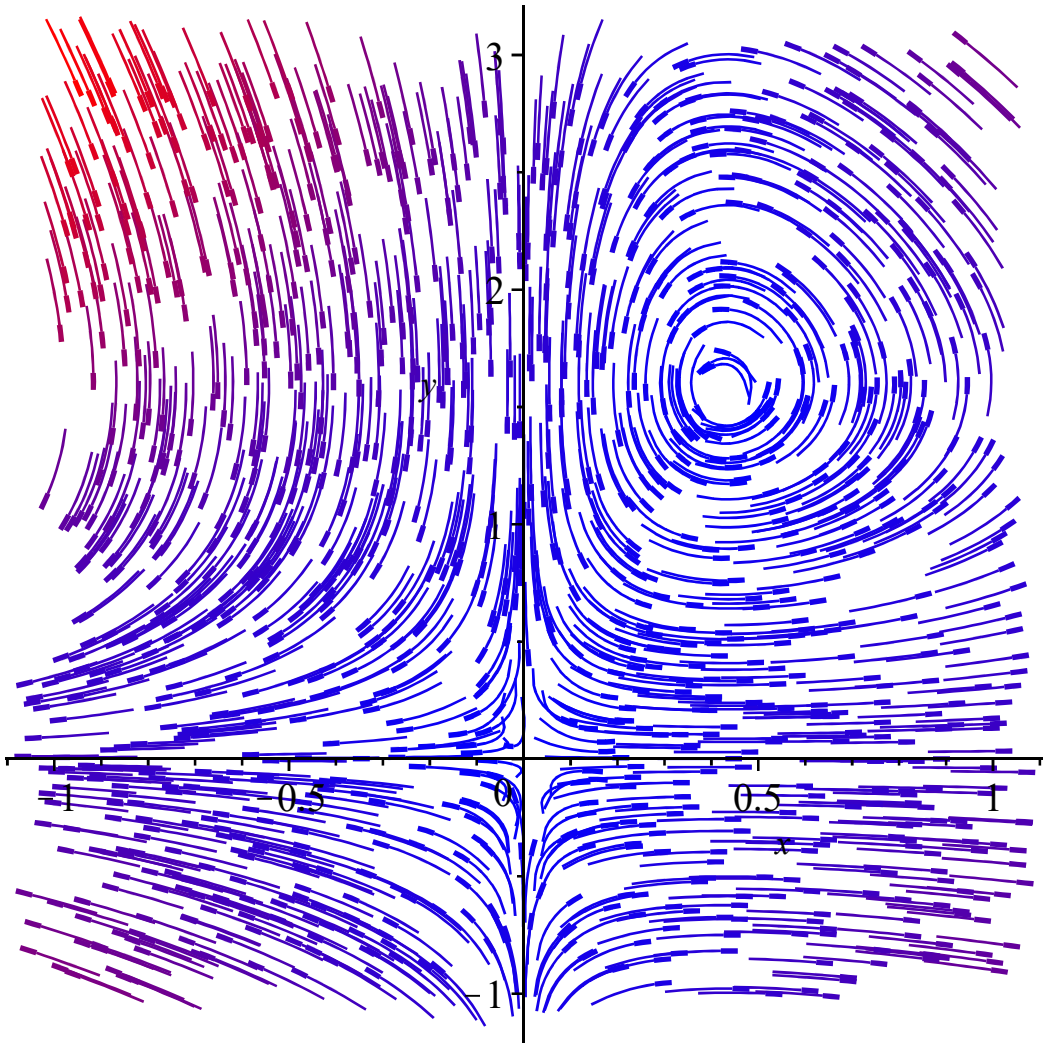
```
> d2 := diff(y(t), t) = -0.3·y(t) + 0.7·x(t)·y(t)
```

$$d2 := \frac{d}{dt}\,y(t) = -0.3\,y(t) + 0.7\,x(t)\,y(t) \qquad (2)$$

```
> solve({rhs(d1) = 0, rhs(d2) = 0}, {x(t), y(t)})
```

$$\{x(t) = 0., y(t) = 0.\}, \{x(t) = 0.4285714286, y(t) = 1.600000000\} \qquad (3)$$

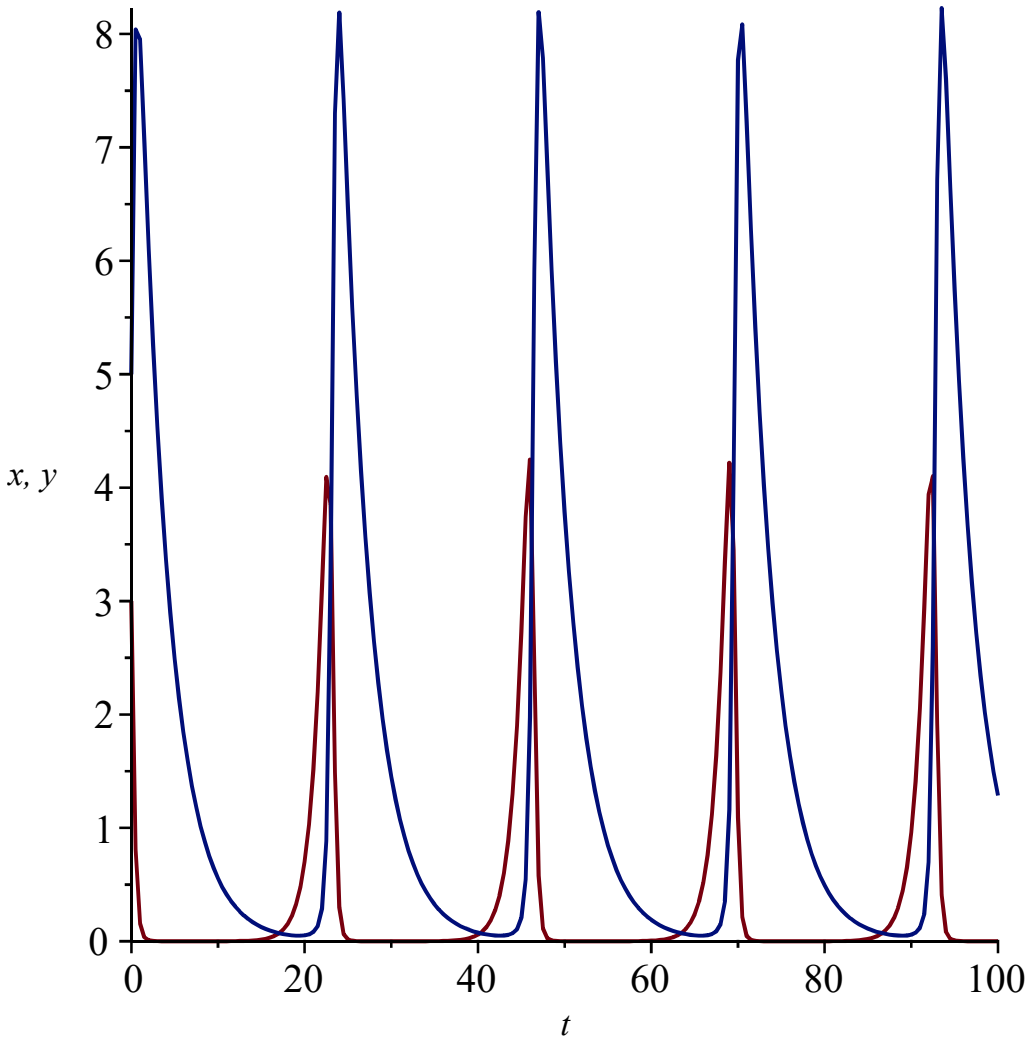
```
> with(DEtools):
> DEplot([d1, d2], [x(t), y(t)], t = -5..5, x = -1..1, y = -1..3, arrows = curve, dirfield = 1200,
      color = magnitude)
```




```
> syst1 := dsolve({d1, d2, x(0) = 3, y(0) = 5}, {x(t), y(t)}, numeric, method = rkf45)
```

$$syst1 := \mathbf{proc}(x\_rkf45)\ \ldots\ \mathbf{end\ proc} \qquad (4)$$

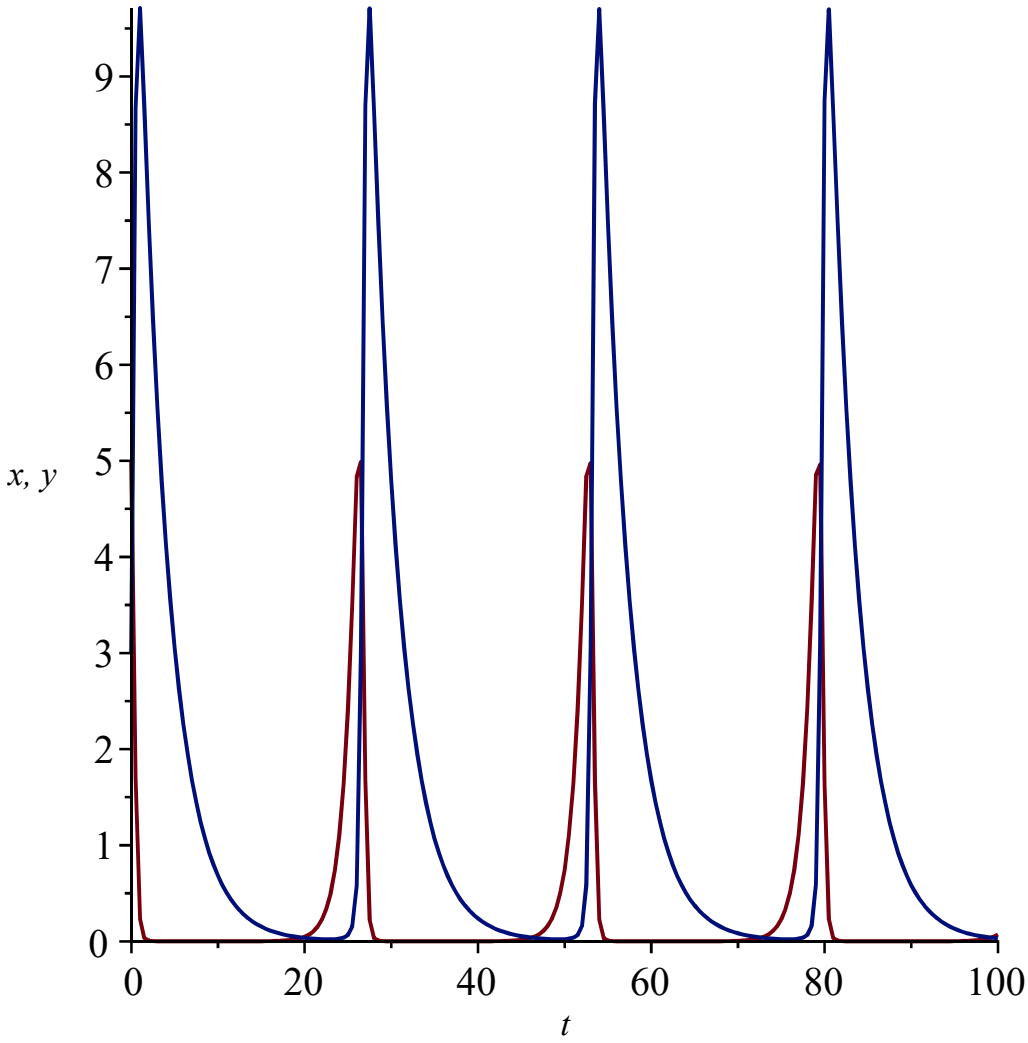
```
> with(plots):
> odeplot(syst1, [[t, x(t)], [t, y(t)]], t = 0..100)
```



> $syst2 := dsolve(\{d1, d2, x(0)=5, y(0)=3\}, \{x(t), y(t)\}, numeric, method=rkf45)$

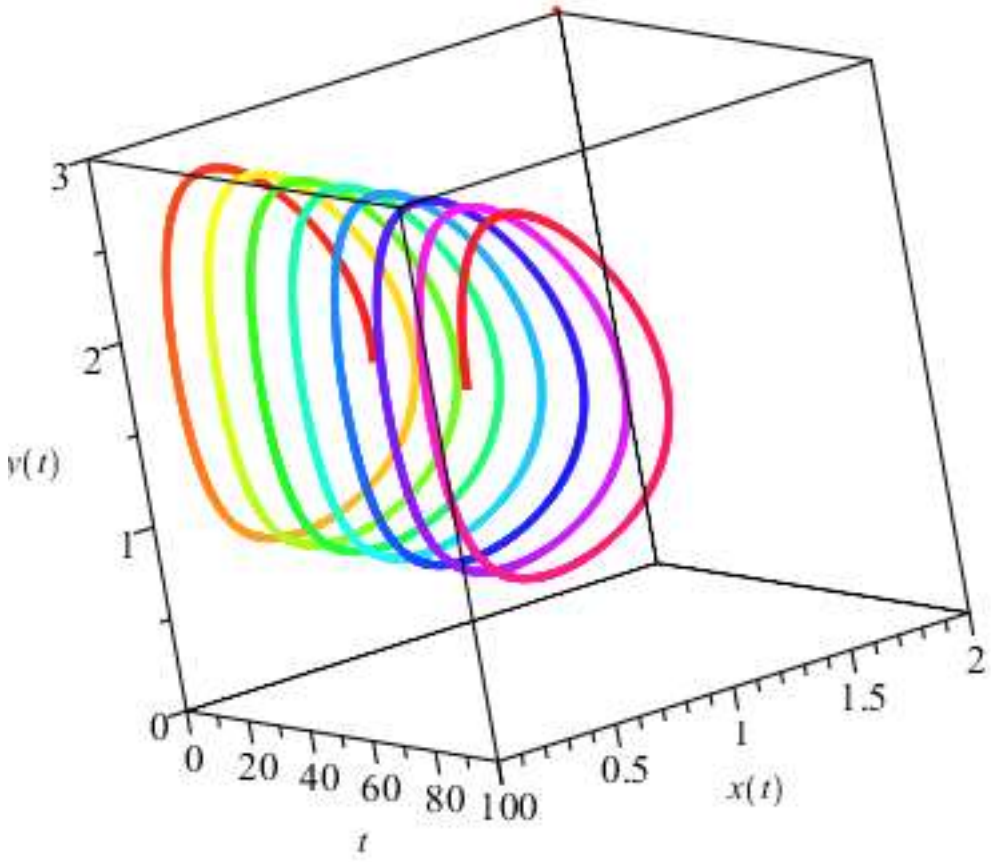
$syst2 := \mathbf{proc}(x\_rkf45)\ \ldots\ \mathbf{end\ proc}$ **(5)**

> $odeplot(syst2, [[t, x(t)], [t, y(t)]], t=0..100)$




```
> DEplot3d( {d1, d2}, {x(t), y(t) }, t = 0 ..100, x = 0 ..2, y = 0 ..3, [ [x(0) = 1, y(0) = 1.5 ], [x(0)
    = 2, y(0) = 3 ] ], scene = [t, x(t), y(t) ], stepsize = 0.01, title ='predator prey', linecolor = t)
```

predator prey



>