

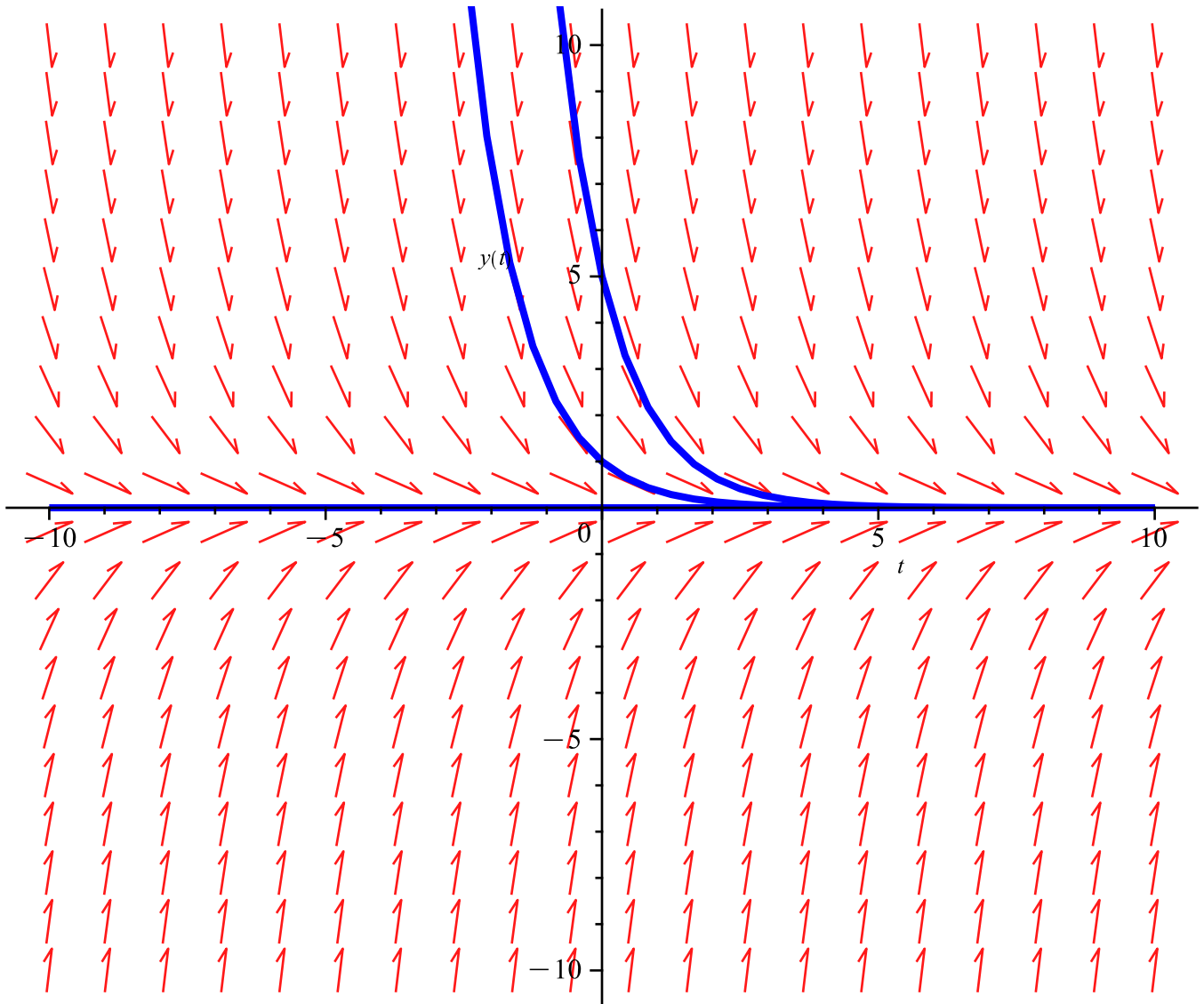
with(DEtools) :

$y' = -y$ is autonomous

myeqn := diff(y(t), t) = -y(t)

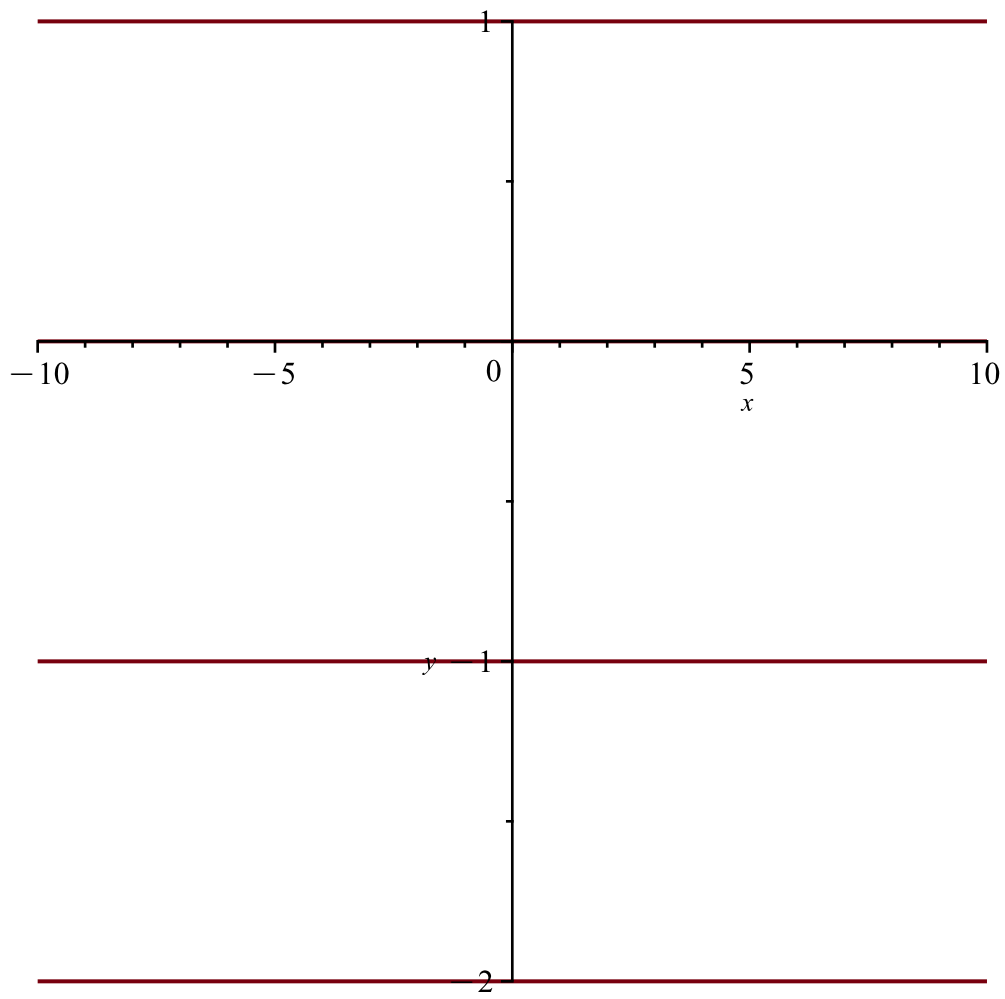
$$\text{myeqn} := \frac{d}{dt} y(t) = -y(t) \quad (1.1)$$

mydirectionfield := DEplot(myeqn, y(t), t = -10..10, y = -10..10, [y(0) = 1, y(0) = 0, y(0) = 5],
linecolor = blue)

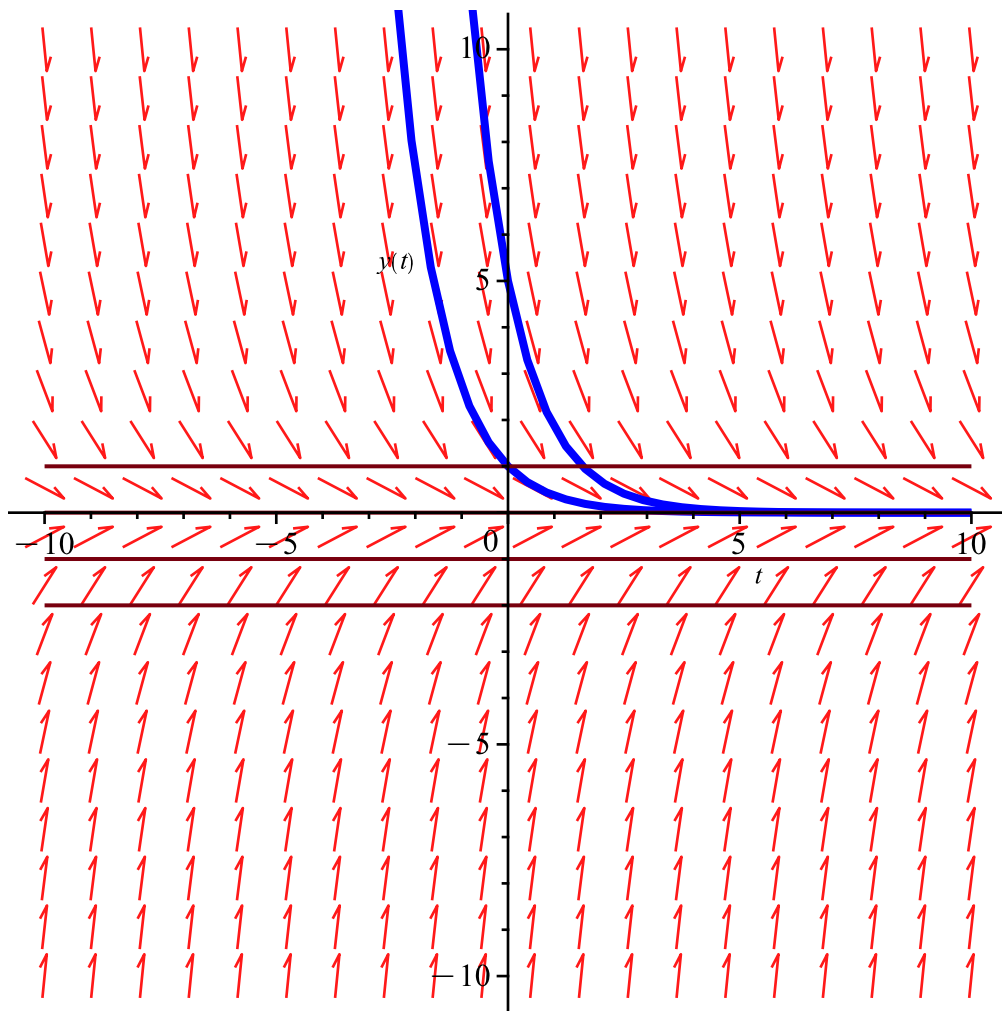


with(plots) :

isoclines := implicitplot([-y = 0, -y = 1, -y = 2, -y = -1], x = -10..10, y = -10..10)



`display([mydirectionfield, isoclines])`

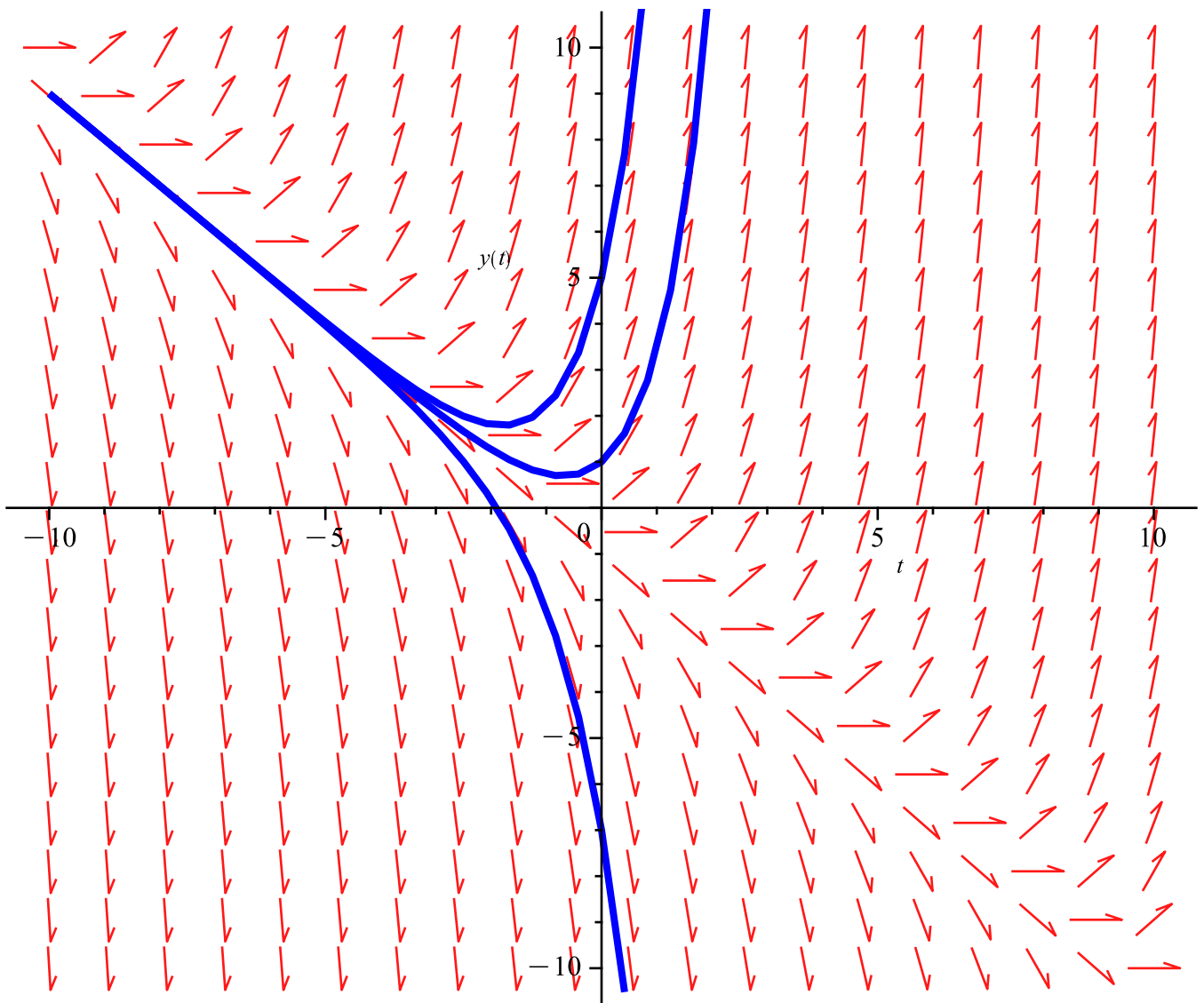


$y' = t + y$ is not autonomous, because of the t on the right-hand side.

`myeqn := diff(y(t), t) = t + y(t)`

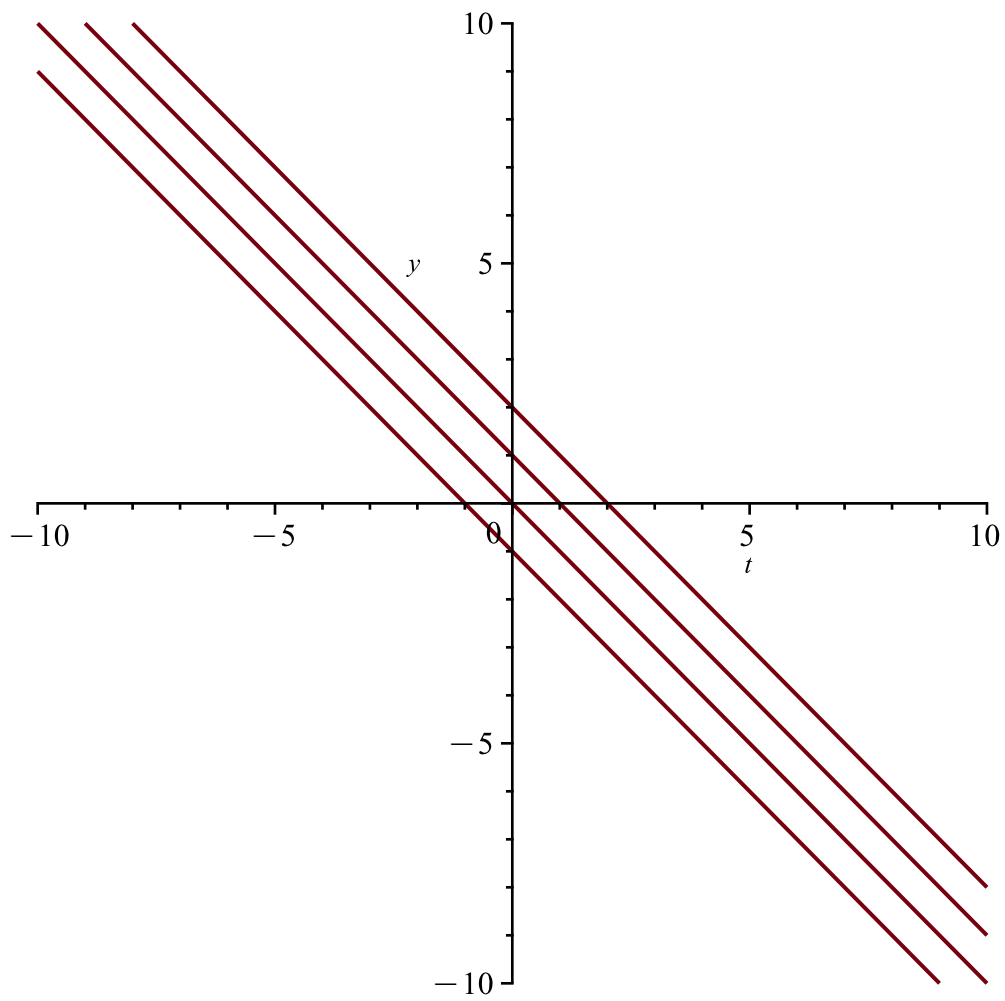
$$\text{myeqn} := \frac{d}{dt} y(t) = t + y(t) \quad (2.1)$$

`mydirectionfield := DEplot(myeqn, y(t), t = -10..10, y = -10..10, [y(0) = 1, y(0) = 5, y(0) = -7],
linecolor = blue)`

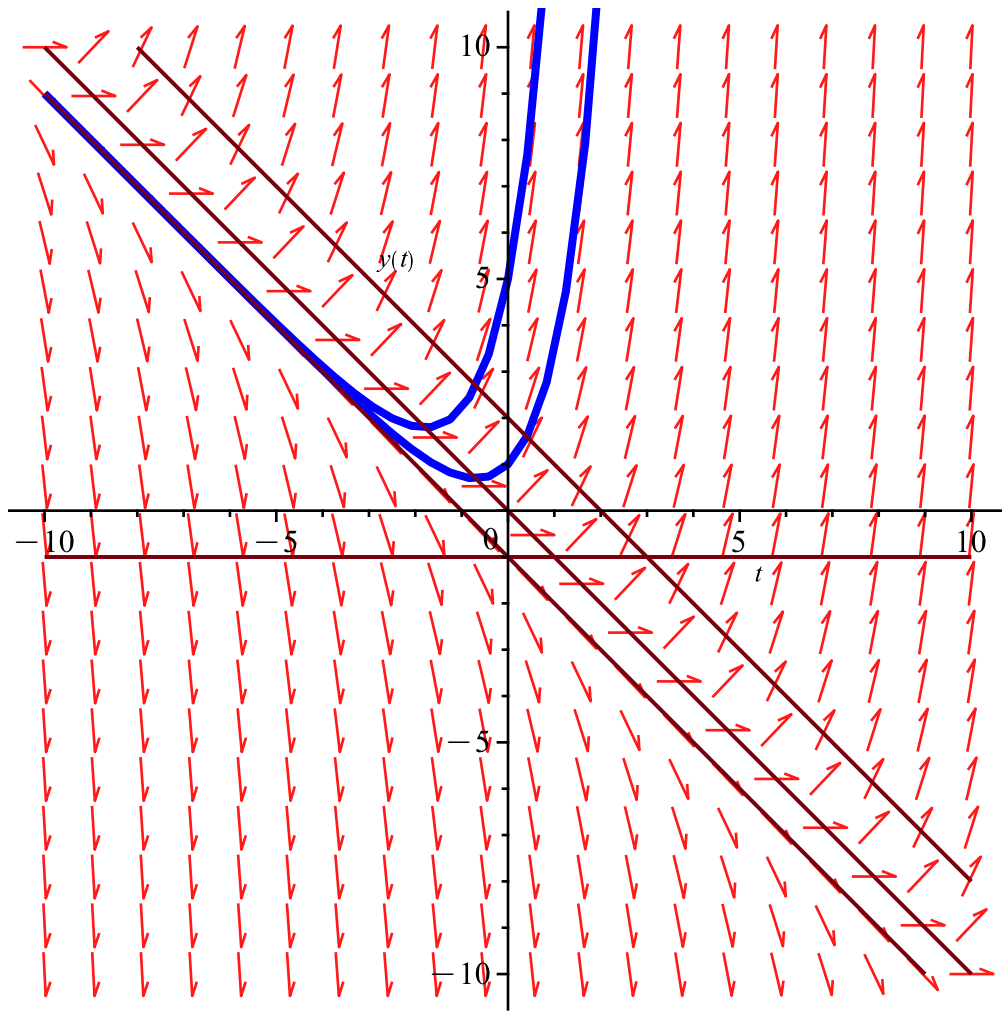


with(plots) :

isoclines := implicitplot([t + y = 0, t + y = 1, t + y = 2, t + y = -1], t = -10..10, y = -10..10)



`display([mydirectionfield, isoclines])`

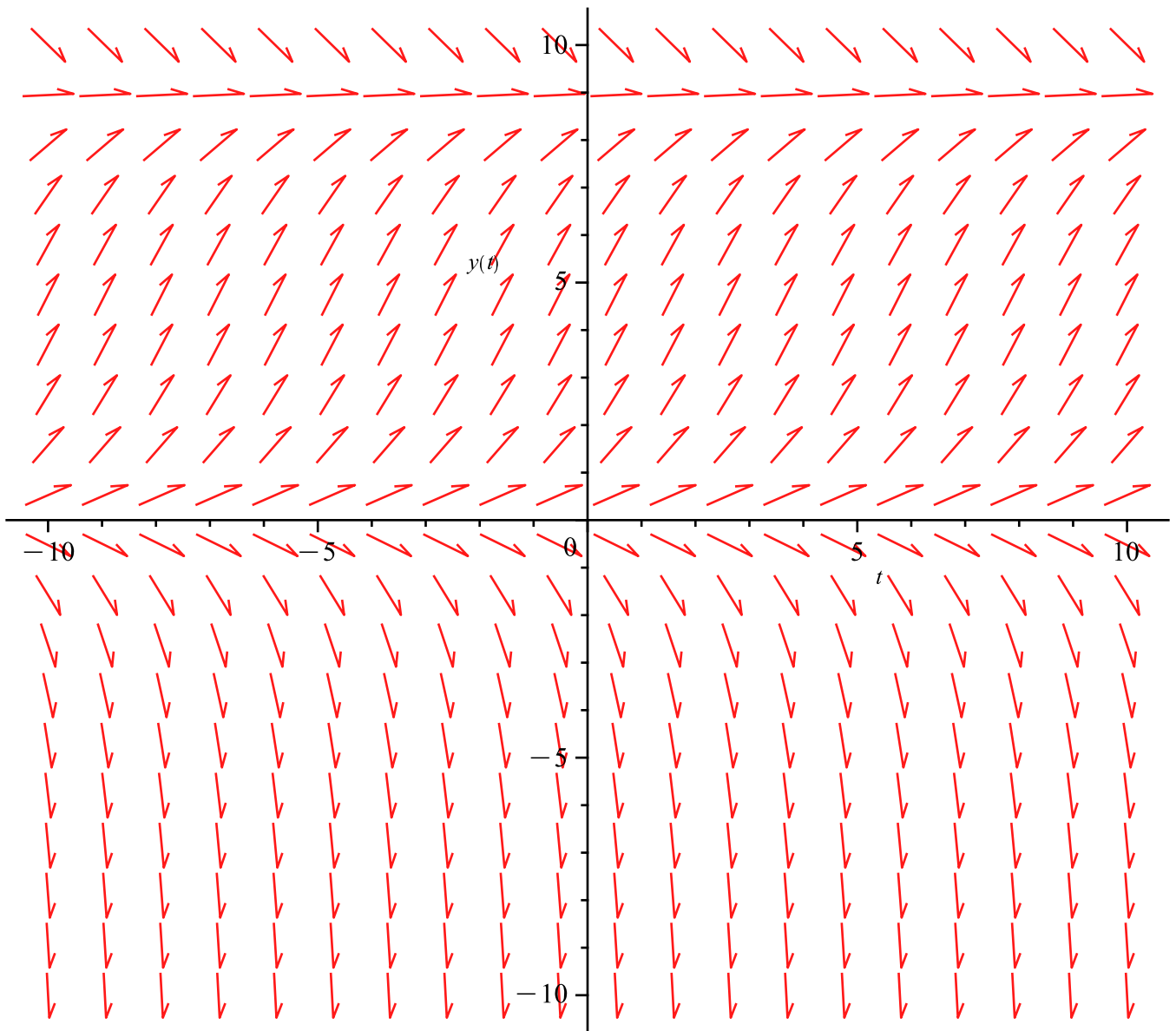


Example 3: $dP/dt = P(a - bP)$ - I can get the field, but I can't draw any solutions...

$$myeqn := \text{diff}(y(t), t) = y(t) \cdot \left(1 - \frac{y(t)}{9}\right)$$

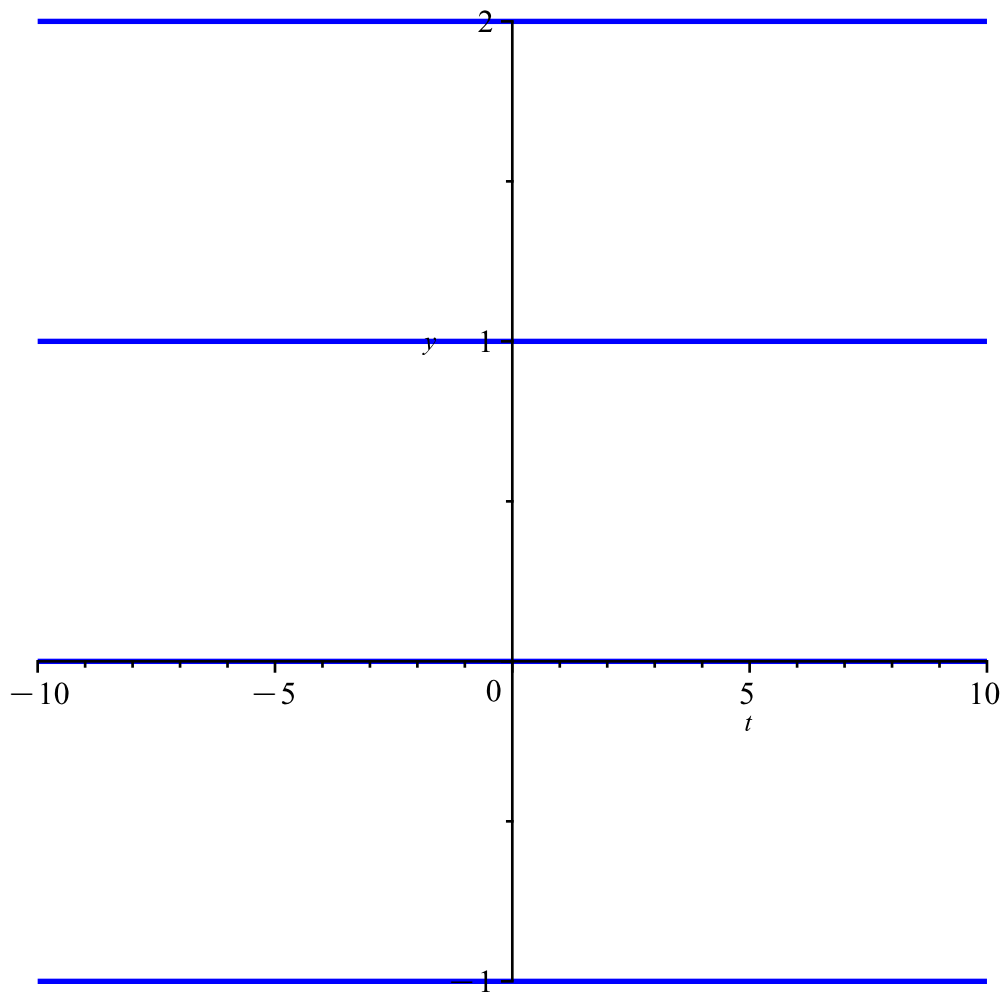
$$myeqn := \frac{d}{dt} y(t) = y(t) \left(1 - \frac{y(t)}{9}\right) \quad (3.1)$$

$$mydirectionfield := \text{DEplot}(myeqn, y(t), t = -10..10, y = -10..10)$$



with(plots) :

isoclines := implicitplot $\left(\left[y\left(1 - \frac{y}{9}\right) = 0, y\left(1 - \frac{y}{9}\right) = 1, y\left(1 - \frac{y}{9}\right) = 2, y\left(1 - \frac{y}{9}\right) = -1\right], t = -10 .. 10, y = -10 .. 10, color = blue, thickness = 2\right)$



`display([mydirectionfield, isoclines])`

