$$\frac{d^2x(t)}{dt^2} + 2\frac{dx(t)}{dt} + 2x(t) = 0$$

$$x(0) = 4$$

$$x'(0) = -2$$

$$\frac{d^2x_1(t)}{dt^2} = -3x_1 + 2x_2 \qquad x_1(0) = -0.075$$

$$x_1'(0) = 0$$

$$\frac{d^2x_2(t)}{dt^2} = 4x_1 - 4x_2 \qquad x_2(0) = 0.15$$

$$x_2'(0) = 0$$

Presa Depredador

$$\frac{dy}{dt} = 4.5y - 0.9 \times y$$

$$\frac{dx}{dt} = -0.016x + 0.08 \times y$$

$$x(0) = 7$$

$$y(0) = 7$$

$$\bar{x} = e^{At}\,\bar{x}(0)$$

$$\dot{\bar{x}} = A\,\bar{x}$$

$$\bar{x}(0) = \begin{bmatrix} c_1 \\ c_2 \end{bmatrix}$$

$$\bar{x}(0) = \begin{bmatrix} 5 \\ -2 \end{bmatrix}$$

$$\bar{x} = \begin{bmatrix} x(t) \\ y(t) \end{bmatrix}$$

$x(0) = 5$

$y(0) = -2$

map(opera, arg., resp)

map(int, Prodtau, tau = 0..t)

MatExpTau = map(rcurry(eval, t = 't - tau'), MatExp)

$$\bar{x} = e^{At}\bar{x}(0) + \int_0^t e^{A(t-\tau)} b(\tau)\, d\tau$$

Ptau = evalm(MatExpTau &* Btau)

×

map('int', Ptau, tau = 0..t)