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> # Solve for the equil points
# x'=60x-3x^2-4xy, y'=42y-3y^2-2xy
> F1:=(x,y)->60*x-3*x^2-4*x*y; F2:=(x,y)->42*y-3*y^2-2*x*y; solve(
{F1(x,y)=0,F2(x,y)=0},{x,y});

$$F1 := (x, y) \rightarrow 60x - 3x^2 - 4xy$$


$$F2 := (x, y) \rightarrow 42y - 3y^2 - 2xy$$


$$\{x = 0, y = 0\}, \{x = 0, y = 14\}, \{x = 20, y = 0\}, \{x = 12, y = 6\} \quad (1)$$

> F:=unapply(<F1(x,y),F2(x,y)>,(x,y)):F(x,y);

$$\begin{bmatrix} -3x^2 - 4xy + 60x \\ -2xy - 3y^2 + 42y \end{bmatrix} \quad (2)$$

> J:=unapply(<diff(F1(x,y),x),diff(F2(x,y),x)|diff(F1(x,y),y),diff(
(F2(x,y),y)>,(x,y)):J(x,y);

$$\begin{bmatrix} -6x - 4y + 60 & -4x \\ -2y & -2x - 6y + 42 \end{bmatrix} \quad (3)$$

> with(LinearAlgebra):X:=[0,0,20,12]:Y:=[0,14,0,6]:
> for i from 1 to 4 do 'J'(X[i],Y[i]) := J(X[i],Y[i]); od;

$$J(0, 0) = \begin{bmatrix} 60 & 0 \\ 0 & 42 \end{bmatrix}$$


$$J(0, 14) = \begin{bmatrix} 4 & 0 \\ -28 & -42 \end{bmatrix}$$


$$J(20, 0) = \begin{bmatrix} -60 & -80 \\ 0 & 2 \end{bmatrix}$$


$$J(12, 6) = \begin{bmatrix} -36 & -48 \\ -12 & -18 \end{bmatrix} \quad (4)$$


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