> $evalf(int(exp(-t^2), t = 1..2), 3)$

$$0.135 \tag{1}$$

> $with(linalg) : with(LinearAlgebra) : with(Student[LinearAlgebra]) :$
> $A := Matrix([[1, 7, 3, 3], [-2, 5, 1, 1], [1, 2, -2, 1], [1, -1, 3, 1]])$

$$A := \begin{bmatrix} 1 & 7 & 3 & 3 \\ -2 & 5 & 1 & 1 \\ 1 & 2 & -2 & 1 \\ 1 & -1 & 3 & 1 \end{bmatrix} \tag{2}$$

> $da := det(A)$

$$da := -48 \tag{3}$$

> $eig := Eigenvalues(A)$

$$\tag{4}$$

$$eig := \begin{bmatrix} & & & \cdots \\ & & & \cdots \\ & & & \cdots \\ & & & \cdots \end{bmatrix}$$

(4)

> $evalf(eig, 4)$

$$
\begin{bmatrix}
3.529 + 2.387\,\mathrm{I} \\[4pt]
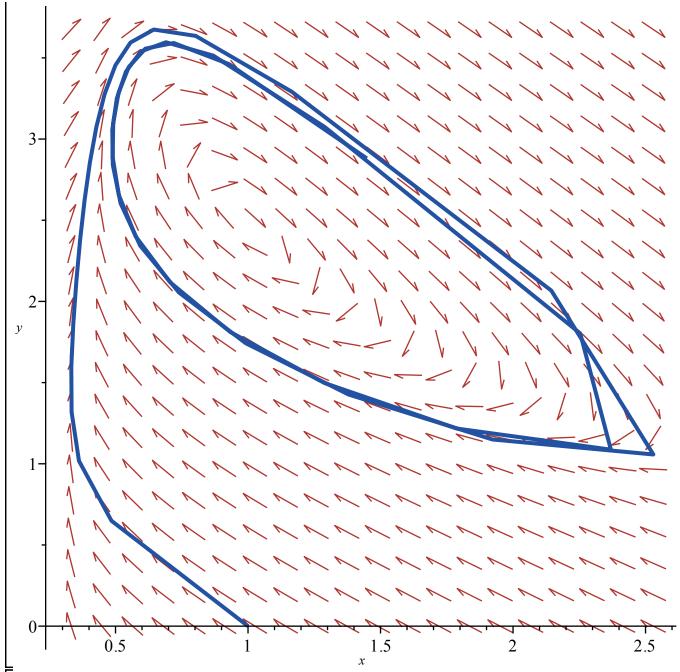3.529 - 2.387\,\mathrm{I} \\[4pt]
0.894 \\[4pt]
-2.952
\end{bmatrix}
\tag{5}
$$

> $eq := diff(u(t), t) = u(t)^2$

$$
eq := \frac{\mathrm{d}}{\mathrm{d}t}\, u(t) = u(t)^2
\tag{6}
$$
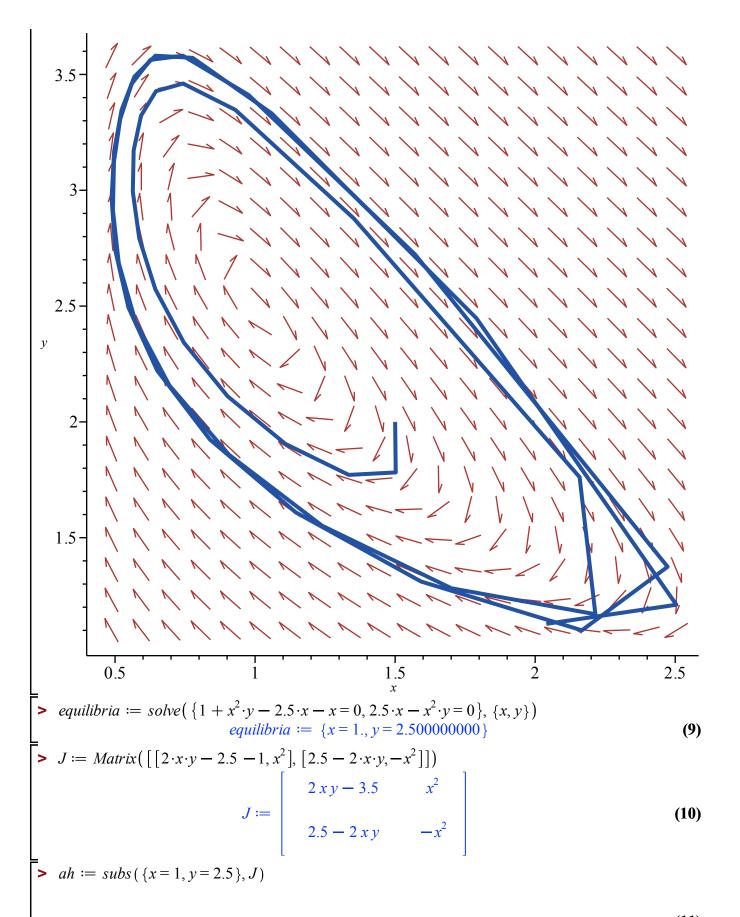
> $sol := dsolve(\{eq, u(0) = 1\}, u(t))$

$$
sol := u(t) = -\frac{1}{t-1}
\tag{7}
$$

> $limit(rhs(sol), t = 1, left)$

$$
\infty
\tag{8}
$$

>
>
>
>

> $with(DEtools) : with(plots) : DEplot\big(\big[diff(x(t), t) = 1 + x(t)^2 \cdot y(t) - 2.5 \cdot x(t) - x(t),$
> $diff(y(t), t) = 2.5 \cdot x(t) - x(t)^2 \cdot y(t)\ \big], [x(t), y(t)], t = 0..20, [[x(0) = 1, y(0) = 0]]\big)$

> $with(DEtools) : with(plots) : DEplot([diff(x(t), t) = 1 + x(t)^2 \cdot y(t) - 2.5 \cdot x(t) - x(t),$
> $diff(y(t), t) = 2.5 \cdot x(t) - x(t)^2 \cdot y(t)], [x(t), y(t)], t = 0..20, [[x(0) = 1.5, y(0) = 2]])$

> $equilibria := solve(\{1 + x^2 \cdot y - 2.5 \cdot x - x = 0, 2.5 \cdot x - x^2 \cdot y = 0\}, \{x, y\})$

$$equilibria := \{x = 1., y = 2.500000000\}$$ **(9)**

> $J := Matrix([[2 \cdot x \cdot y - 2.5 - 1, x^2], [2.5 - 2 \cdot x \cdot y, -x^2]])$

$$J := \begin{bmatrix} 2xy - 3.5 & x^2 \\ 2.5 - 2xy & -x^2 \end{bmatrix}$$ **(10)**

> $ah := subs(\{x = 1, y = 2.5\}, J)$

(11)

$$ah := \begin{bmatrix} 1.5 & 1 \\ -2.5 & -1 \end{bmatrix} \tag{11}$$

> $eigenvalues\,(ah)$

$0.250000000000000 + 0.968245836551854\ I,\ 0.250000000000000 - 0.968245836551854\ I$ **(12)**

>