

MATH2214 - Class Work No1- Linear First ODE- Konaté

For all equation here below, we consider that the independent variable t is such that $t \geq 0$; if necessary, $t \neq 0$.

A• For each equation, find its order, say if it is linear with constant coefficients, linear with variable coefficients, homogeneous or not, non linear, its variables are separable or not .

B• Solve the equations and answer the subsidiary question if any:

$$1\bullet \begin{cases} y' + \frac{e^{2t}}{1 + e^t}y = 0 \\ y(0) = 1 \end{cases} \quad \text{then find } y(2).$$

$$2\bullet \begin{cases} ty' + y = t \\ y(1) = 1 \end{cases} \quad \text{then find } y(2).$$

$$3\bullet \begin{cases} y' = -2ty + e^{-2t} \\ y(0) = 0 \end{cases}$$

$$4\bullet \begin{cases} y' = e^t y + t \\ y(0) = 1 \end{cases}$$

$$5\bullet \begin{cases} y' = 3 \sin(t) + 1 + y \\ y(0) = 0 \end{cases}$$

$$6\bullet \begin{cases} y' - 2ty^3 = 0 \\ y(2) = 1 \end{cases}$$

$$7\bullet \begin{cases} ty' = y \\ y(5) = 1 \end{cases} \quad \text{then find } y(3).$$

$$8\bullet \begin{cases} y' = y(4 - y) \\ y(0) = 1 \end{cases}$$

$$9\bullet \begin{cases} y' = y^2 \\ y(2) = 1 \end{cases}$$

$$10\bullet \begin{cases} y' = \frac{t}{y + y^2} \\ y(1) = 3 \end{cases}$$
