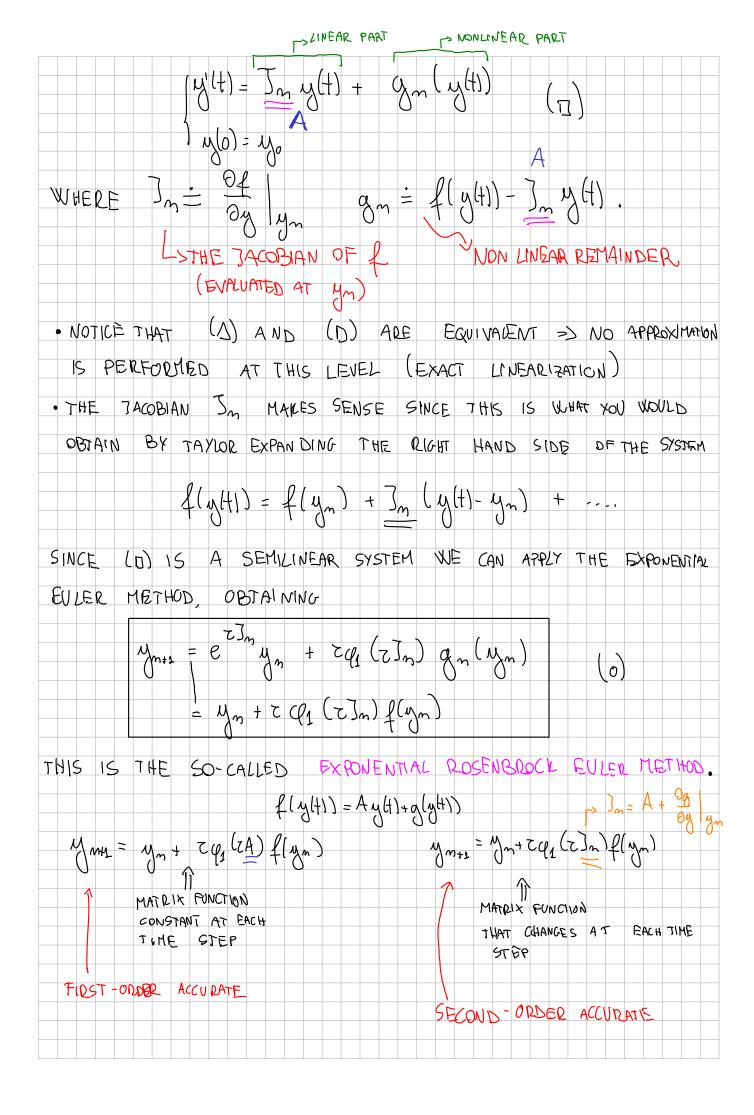
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CONSIDER										



FOR THE CONVERGENCE PROOF OF EXPONENTIAL ROSENBROCK EULER WE ASSUME THAT fly(+1) = Ay(+)+ g(y(+)). AS USUAL WE ASSUME THAT ALL OCCURING DERIVATIVES ARE BOUNDED. THEOREM 3 (CONVERGENCE OF EXPONENTIAL POSENBLOCK EVLER) CONSIDER PROBLEM (A) AND INTEGRATOR (O). ASSUME & IS SUFFICIENTLY OFTEN DIFFERENTABLE. THEN HERE OFFIS ON THE CONSTANT C MAY DEPEND ON THE FINAL TIME to BUT ON W PROOF FROM THE V.O.C. FORMULA WE GET (SEE (I))

THE V.O.C. FORMULA WE GET (SEE (I))

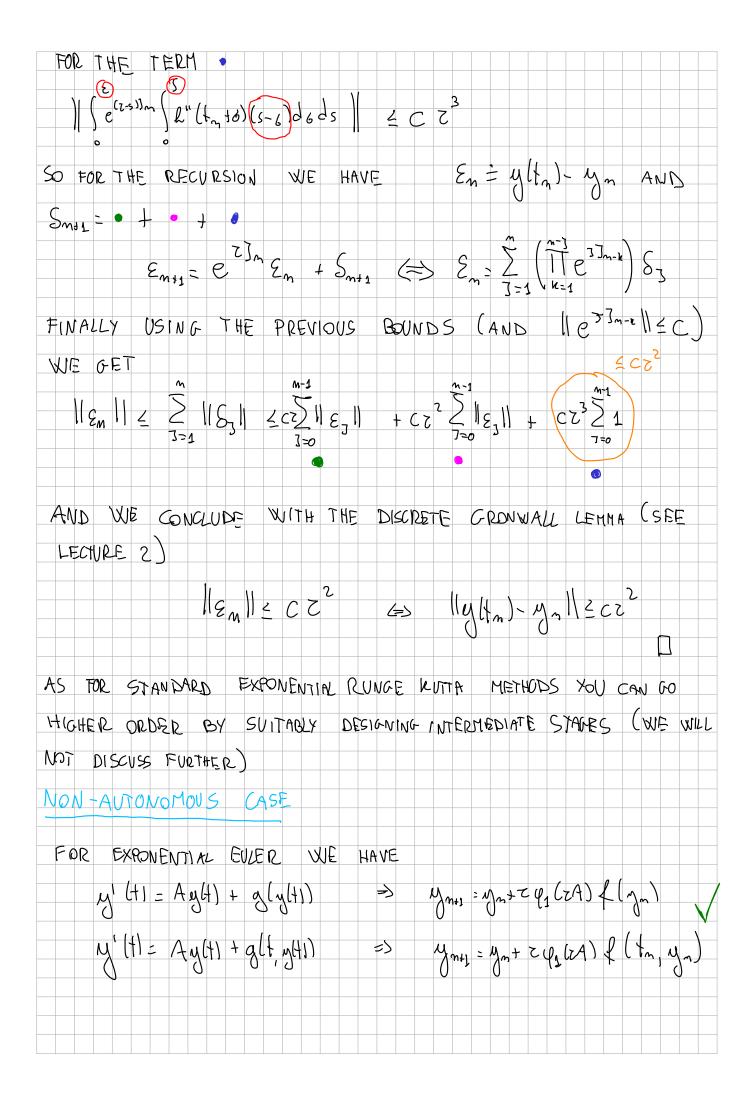
THE V.O.C. FORMULA WE GET (SEE (I))

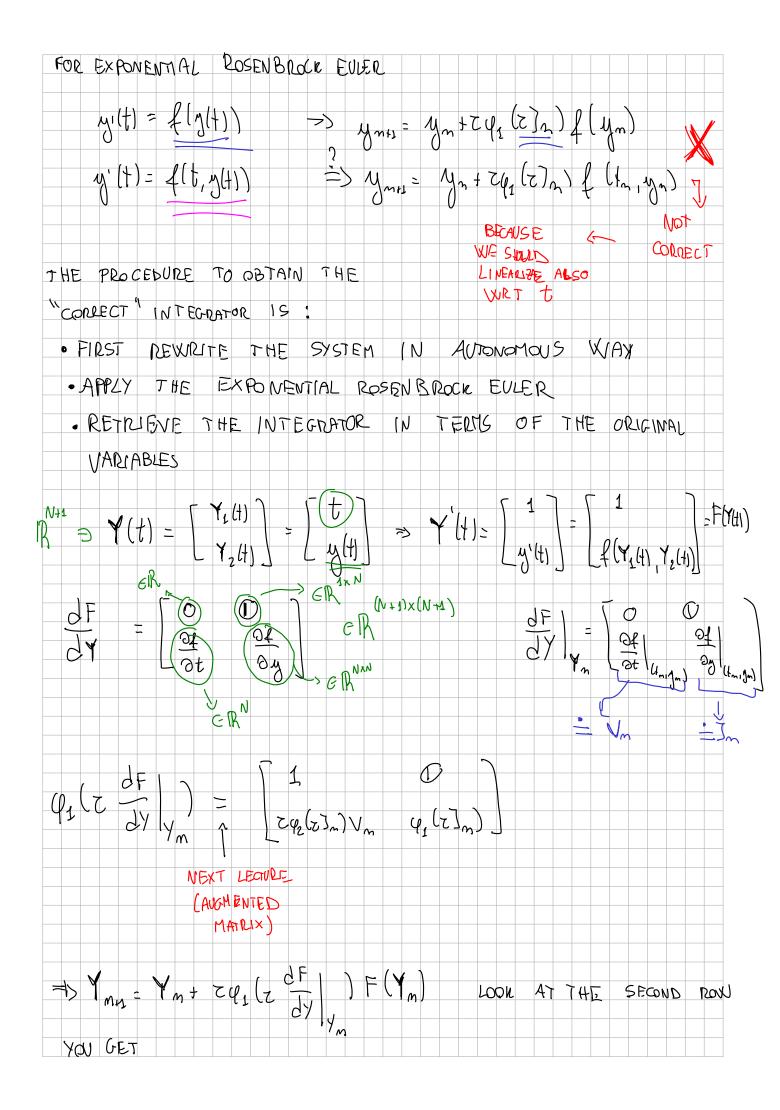
THE V.O.C. FORMULA WE GET (SEE (I)) FOR SHORTHAND NOTATION WE SET hom(t) = an (w(t)) so THAT

Therefore the set of the set o BY TAYLOR EXPANDING hm WE GET $h(t_n + s) = h_m(t_n) + h_m(t_n) s + \int h''(t_{m+6})(s-6)d6$. HENCE BY PLUGGING IT IN THE V.OC. FORMULA WE GET $\frac{y(t_{m+1})}{y(t_{m+1})} = e^{-\tau} y(t_{m}) + z(t_{1}(z)_{m}) k_{m}(t_{m}) + z^{2} (q_{2}(z)_{m}) k$ WE COMPARE THIS WITH THE NUMERICAL SOLUTION

MATHER ET MAN + Z(J(Z)) an (MA)

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y(tm) - ym+1 = e 2100 (y(tm) - ym) + zy(z]m) (Lm(tm) - ym(ym))
                  +7^{2} \psi_{2} (7)_{m} \lambda_{m}(+_{m}) + \int_{0}^{2} (2-5)^{3}m \left[\lambda^{m}(+_{m}+\delta)(s-6)d6ds\right]
                                                              gm (y(H) = f(y(H))
 FOR THE PART
l_{m}(t_{n}) - g_{n}(y_{m}) = g_{m}(y_{n}t_{n}) - g_{m}(y_{m})
                                                                         - 3m y4)
                      = (f(yla)) - In y(ta)) - (f(yn) - In yn)
                      = (Ay(tm) + g(y(tm)) - In y(tm)) -
                         (Aym + g(ym) - 3 m /m)
SINCE f(y(t)) = Ay(t) + O(y(t)) => J_m = \frac{\partial f}{\partial y} = A + \frac{\partial g}{\partial y} (y_m)
AND SO
                    = (a(ytm)) - (30) (ym) w(tm)) -
                     (8(Mm) - 308 (Mm) Mm)
                   = (q(ykm)) - q(ym)) - \frac{2y}{3y}(ym)(ykm) - ym)
  SINCE & IS LIPSCHITZ (AS BDD DERIVATIVES) WE HAVE
FOR THE PART
   l_{m}(t_{m}) = \frac{\partial u_{m}}{\partial u_{m}} | u_{m}(t_{m}) = \left(\frac{\partial u_{m}}{\partial u_{m}}(u_{m}(t_{m})) - \frac{\partial u_{m}}{\partial u_{m}}(u_{m})\right) | u_{m}(t_{m})
 =1> 11 R' (+m) 1) = C | M(+m) - Mm)
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Mnos + Mm + 2 (1 (2)m) f(tm, Mm) + 2 (2 (2)m) Vm THIS IS THE EXPONENTIAL POSENBROCK EULER METHOD FOR NON AUTONOMOUS SYSTEMS. STANDARD ROSENBROCK METHODS THEY ARE ESSENTIALLY IMEX SCHEMES IN WHICH YOU EXPLOIT BACOBLAND 4 (+1 = Ayl+) +g(y(+1)) FOR SEMILINEAR SYSTEMS WE STUDED BF EULER (I - ZA) ym = ym + g(ym) ROSENBROCK METHOD FOR 4 (+)= & [y(+)) 15 $(I - \frac{c}{2} I_m) \kappa_s = z f(y_m)$ Mnn = Mn + K1 -> SECOND-ORDER A- STABLE LABORATORY (2, y(1,x)=82xxy(+,x)+ 1+(y(+x)) -> IN SPACE SECOND ONDER L Mo = 4 x (1-x) CENTERED F.D. HOM. DIR. B.C. TO CHECK THE JACOBIAN $\frac{dF}{dy}\Big|_{\bar{y}} \vee \sim \frac{m(F(\bar{y}+i\epsilon v))}{2}$ \(\theta\(\xi^2\) COMPLEX STEP