Yanal Shaher ALFaouri
20080506 0

ODE's

- **Autonomous**
  $\dot{x} = f(x)$
  - **Linearization**
    - **Periodicity**
      - Bendixon
      - Morse Lemma
      - Poincaré-Bendixon
    - **Stability**
      - By checking the $\underline{\lambda}$'s
- **Non-Autonomous**
  - $\dot{x} = A(t)\,x$
    - $A(t)$ is not T-Periodic
      - $\dot{x} = A(t)\,x + f(t,x)$
      - $\dot{x} = Ax + B(t) + f(t,x)$
      - $\dot{x} = Ax + B(t)$
    - $A(t)$ is T-Periodic
      - Floquet & Thm. 6.6
  - $\dot{x} = f(t,x)$
    - **Linearization**
      - **Periodicity**
      - **Stability**
        - Lyapunov

for every case it should satisfy the conditions related to it.