WAEL

① Autonomous system :-

ⓐ Linear $\dot{x} = Ax$ (we can use eigenvalues of A)

ⓑ Non-linear $\dot{x} = f(x)$ (we can linearize around critical pts) OR (we check for periodic solution).

② Non-Autonomous system

ⓐ ① Linear ($\dot{x} = Ax + B(t)x$) we use 6.2, 6.3, 6.4

② If $\dot{x} = A(t)x$ and $A(t)$ is periodic we draw conclusion from the exponents $(\lambda_1, \lambda_2, ..)$ of stability of periodic solution and non trivial solutions.

ⓑ Non-linear

① If $\dot{x} = Ax + B(t)x + f(t,x)$ (poicar's if possible)

② If $\dot{x} = A(t)x + f(t,x)$ and $A(t)$ periodic use 7.2

ⓒ If we can find $V(x,y)$ we can use 8.1, 8.2 8.3