

$$\ddot{x} + f(x)\dot{x} + g(x) = 0$$

$g(x)$ odd & $g(x) > 0$ FOR $x > 0$

$$F(x) = \int_0^x f(u) du$$

$$y = \dot{x} + F(x)$$

$$\dot{x} = y - F(x)$$

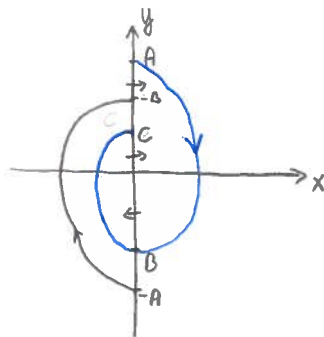
$$\dot{y} = -g(x)$$

$(0,0)$ EP

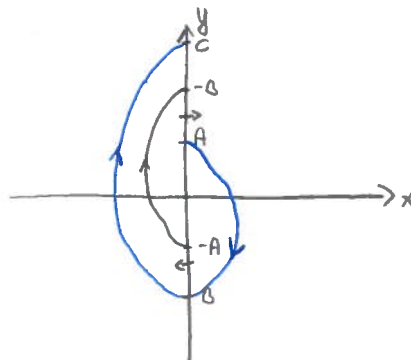
$F(x)$ odd

$(x(1), y(1))$ SOL

$(-x(1), -y(1))$ SOL



$$\rightarrow |A| > |B| > |C|$$



$$|A| < |B| < |C|$$

PERIODIC SOLUTION

$$|A| = |B| = |C|$$

$F(x)$ 3 ZEROS: $-a, 0, a$ ($a > 0$)

$F(x) \rightarrow \infty$ ($x \rightarrow \infty$) MONOTONICALLY $x > a$

$$F'(0) < 0$$

$\exists!$ PERIODIC SOLUTION

STABLE LIMIT CYCLE