A - состояние

L, R

L - индуктивности

R - резистор

по зак. Кирхгофа. уравнение: $\boxed{V(t) = L\frac{d^2q}{dt^2} + R\frac{dq}{dt} + \frac{q}{C(V)}}$ (1)

$$\boxed{C(V) = C_0 + \alpha V^2} \quad (1.1)$$

$$\boxed{I = \frac{dq}{dt}} \quad (2)$$

B - состояние

$$L(I)\frac{dI}{dt} + RI + V(t) = 0 \quad \Rightarrow$$

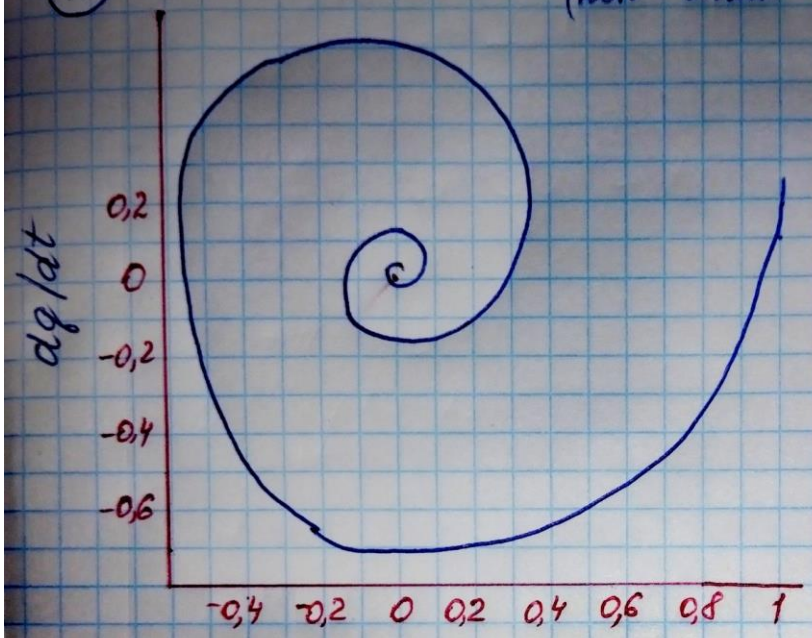
$$\frac{d^2x}{dt^2} + f(x)\frac{dx}{dt} + g(x) = 0.$$

$$L\frac{d^2q}{dt^2} + R\frac{dq}{dt} + q/(C_0 + \alpha q^2) = 0.$$

$$\boxed{L(I) = L_0 + \beta I^2}$$

$$(L_0 + \beta I^2)\frac{dI}{dt} + RI + (V(t) = 0.$$

(A) (non-linear capacitance)



(B) (non-linear Inductance)