#Uniswap v3

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In Uniswap v2 LPs had to provide liquidity across the entire curve

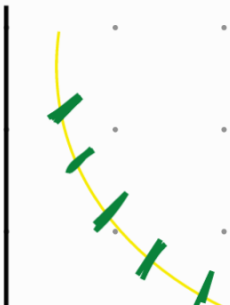
$$xy = K$$

In Uniswap v3 Ranges can be used where you can provide liquidity from for eg

(x_1, y_1) to (x_2, y_2)

- Same Amount of fees as v2 but for smaller amount of capital.

Ticks



Each tick is used to divide curve into indivisual prices which can be used to specify

Start & end to positions.

Tick T = $\text{Log}_{1.0001}(P)$

↳ Price

$$P = 1.0001^T$$

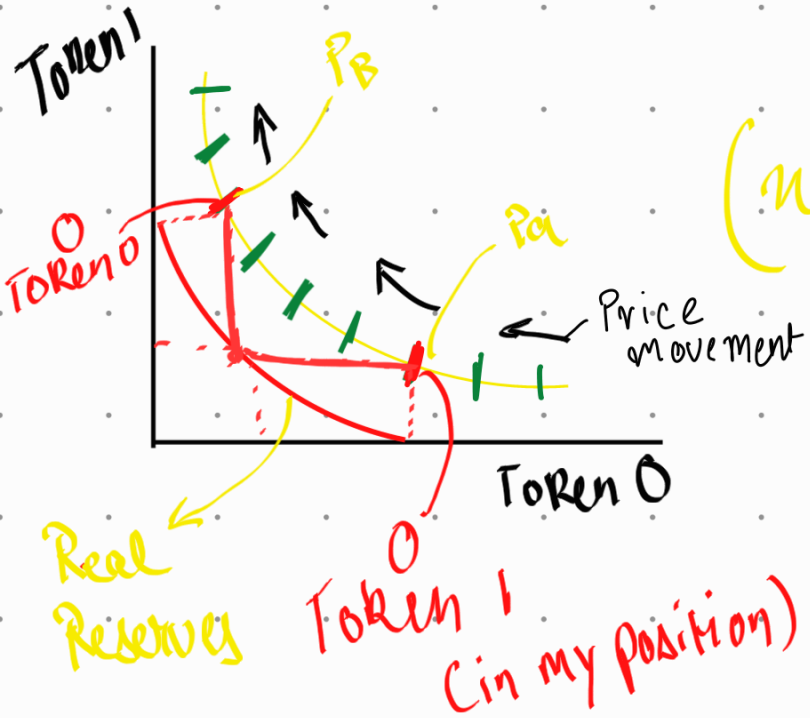
Liquidity Provisioning

Real Reserves

$$\left(x + \frac{L}{\sqrt{P_b}}\right)\left(y + L\sqrt{P_a}\right) = L^2$$

where $L = \sqrt{k}$

and L is measure of liquidity



if $\sqrt{P_a} = 0$ & $\sqrt{P_B} = \infty$

$$\left(x + \frac{y}{\sqrt{P_B}}\right)\left(y + L\sqrt{P_a}\right) = L^2$$

$$xy = K$$