

#Description: Sandwich attacks

## Sandwich attacks

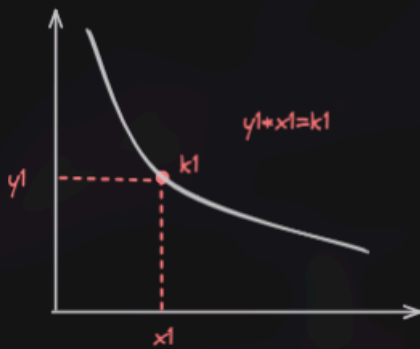
Special case of frontrunning particularly done for profits.

### slippage

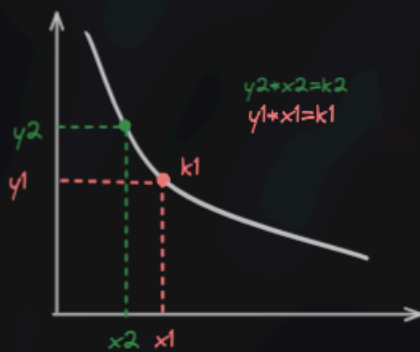
Slippage is movement of price of an asset. In uniswap with  $y * x = k$  price can be forced to move by executing swaps. this can be exploited with sandwich attacks to force users into buying assets at high or selling at low.

# SLIPPAGE

$$y * x = k$$



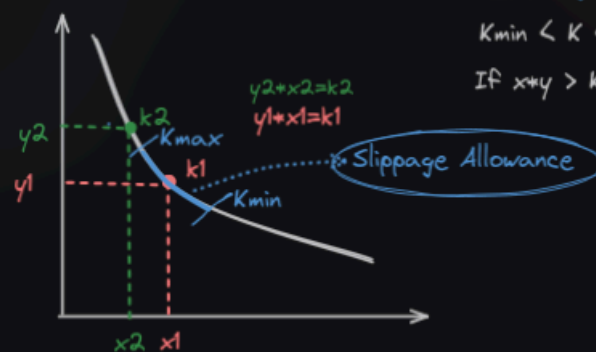
SWAP  $(100)y$  for  $1(x)$



## Slippage Margin

$$k_{min} < K < k_{max}$$

If  $x * y > k_{max}$  or  $x * y < k_{min}$  revert



**Slippage protection** is used to protect against such attacks. Price movements can be limited and Tx revert if swap makes price move outside of a certain acceptable margin.  
Always set slippage when performing a swap.

## How to Find

- If protocol interacts with AMM or executes swaps Look for slippage threshold
- think a bout slippage protection
- look at all swap calls to figure out slippage configuration
- If looking at AMMs look for if protocol provides optimal slippage control to users