

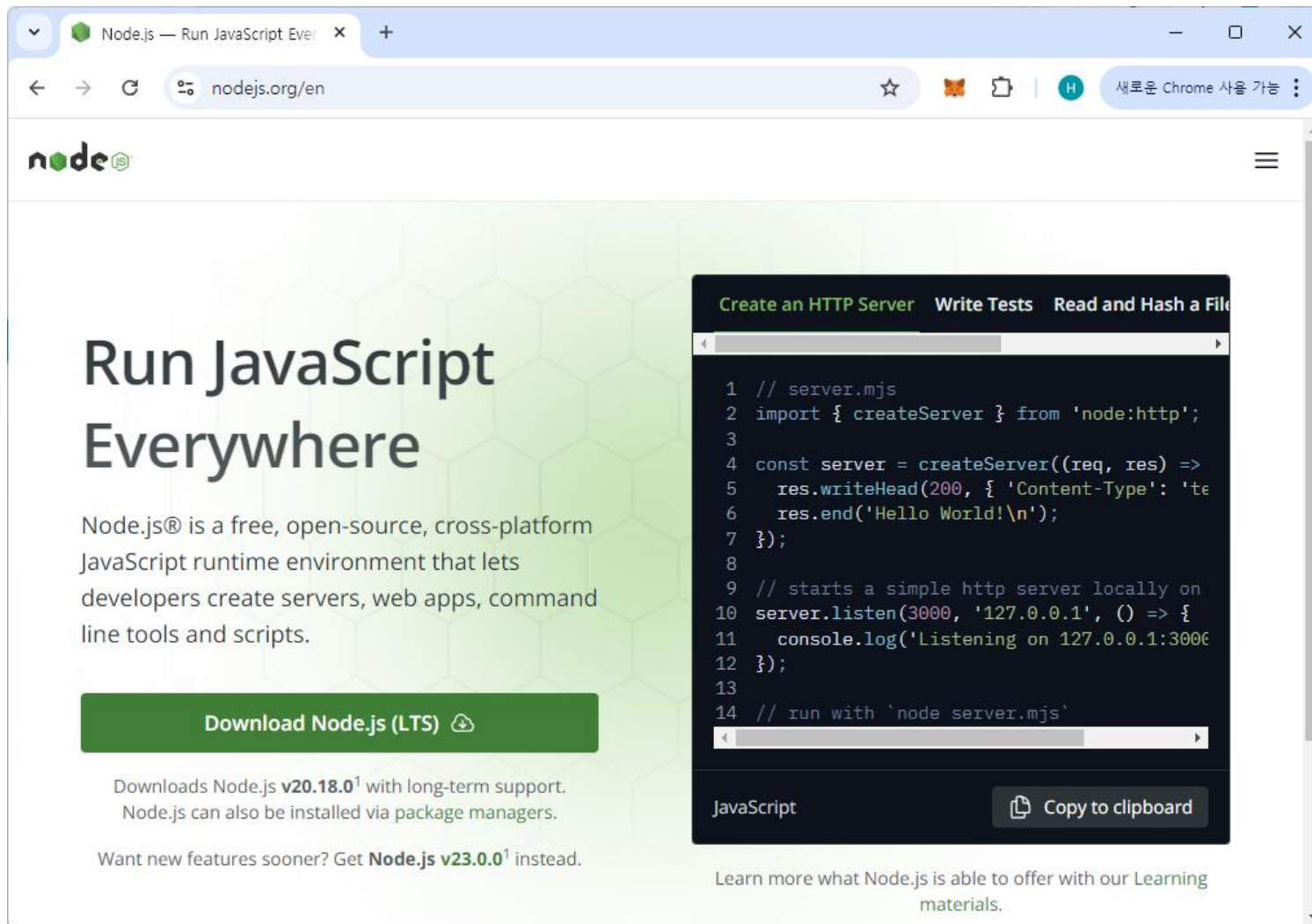
Be as proud of Sogang as Sogang is proud of you

블록체인 BlindAuction Dapp



서강대학교
SOGANG UNIVERSITY

■ Node.js 설치 (<https://nodejs.org/en>)



The screenshot shows the Node.js website in a web browser. The main heading is "Run JavaScript Everywhere". Below it, a paragraph describes Node.js as a free, open-source, cross-platform JavaScript runtime environment. A green button labeled "Download Node.js (LTS)" is visible. To the right, a code editor snippet shows a simple HTTP server in JavaScript. At the bottom, there is a link to "Learn more what Node.js is able to offer with our Learning materials."

Run JavaScript Everywhere

Node.js® is a free, open-source, cross-platform JavaScript runtime environment that lets developers create servers, web apps, command line tools and scripts.

[Download Node.js \(LTS\)](#)

Downloads Node.js **v20.18.0**¹ with long-term support. Node.js can also be installed via package managers.

Want new features sooner? Get **Node.js v23.0.0**¹ instead.

```
// server.mjs
import { createServer } from 'node:http';

const server = createServer((req, res) => {
  res.writeHead(200, { 'Content-Type': 'text/plain' });
  res.end('Hello World!\n');
});

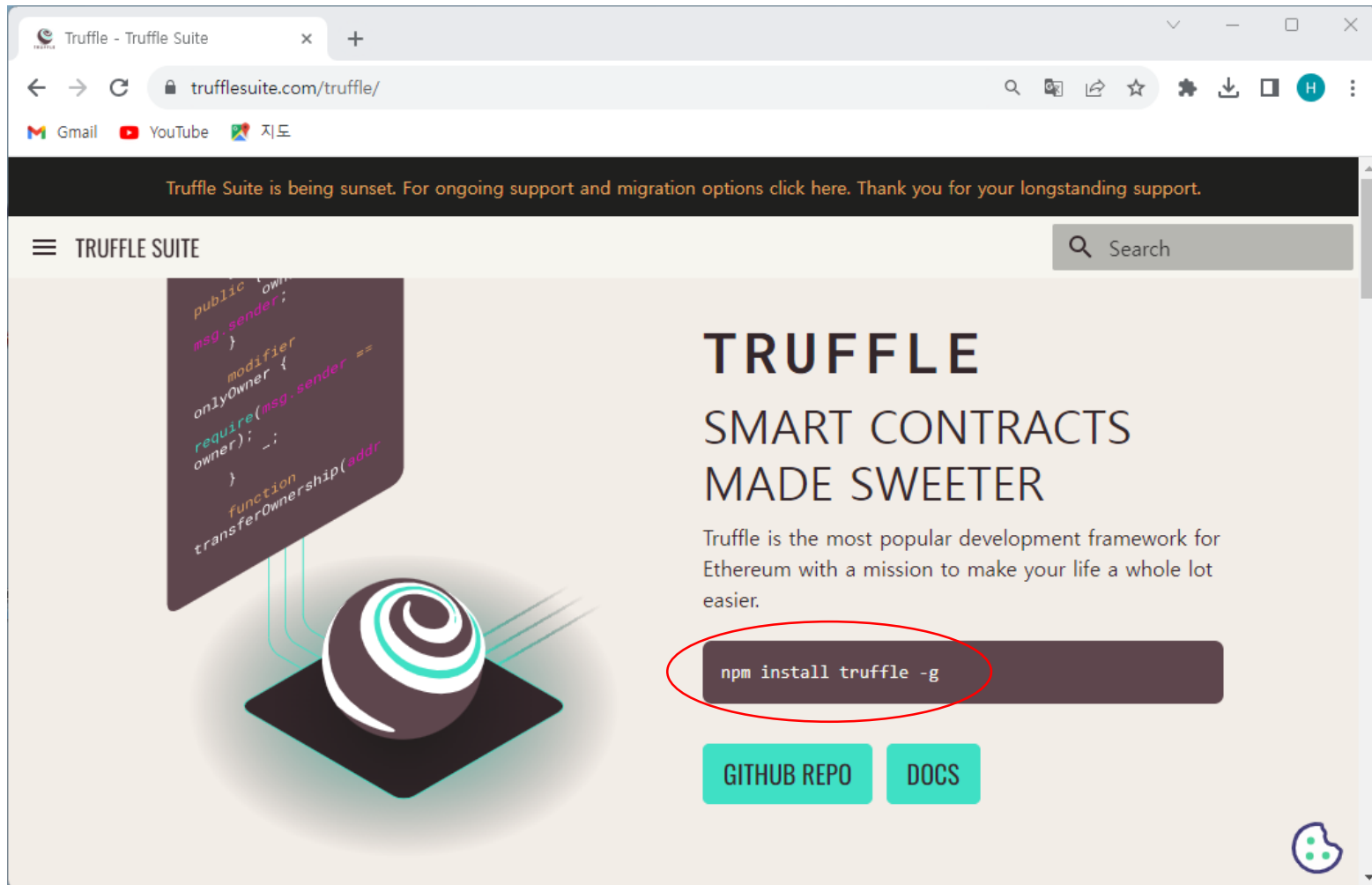
// starts a simple http server locally on
server.listen(3000, '127.0.0.1', () => {
  console.log('Listening on 127.0.0.1:3000');
});

// run with 'node server.mjs'
```

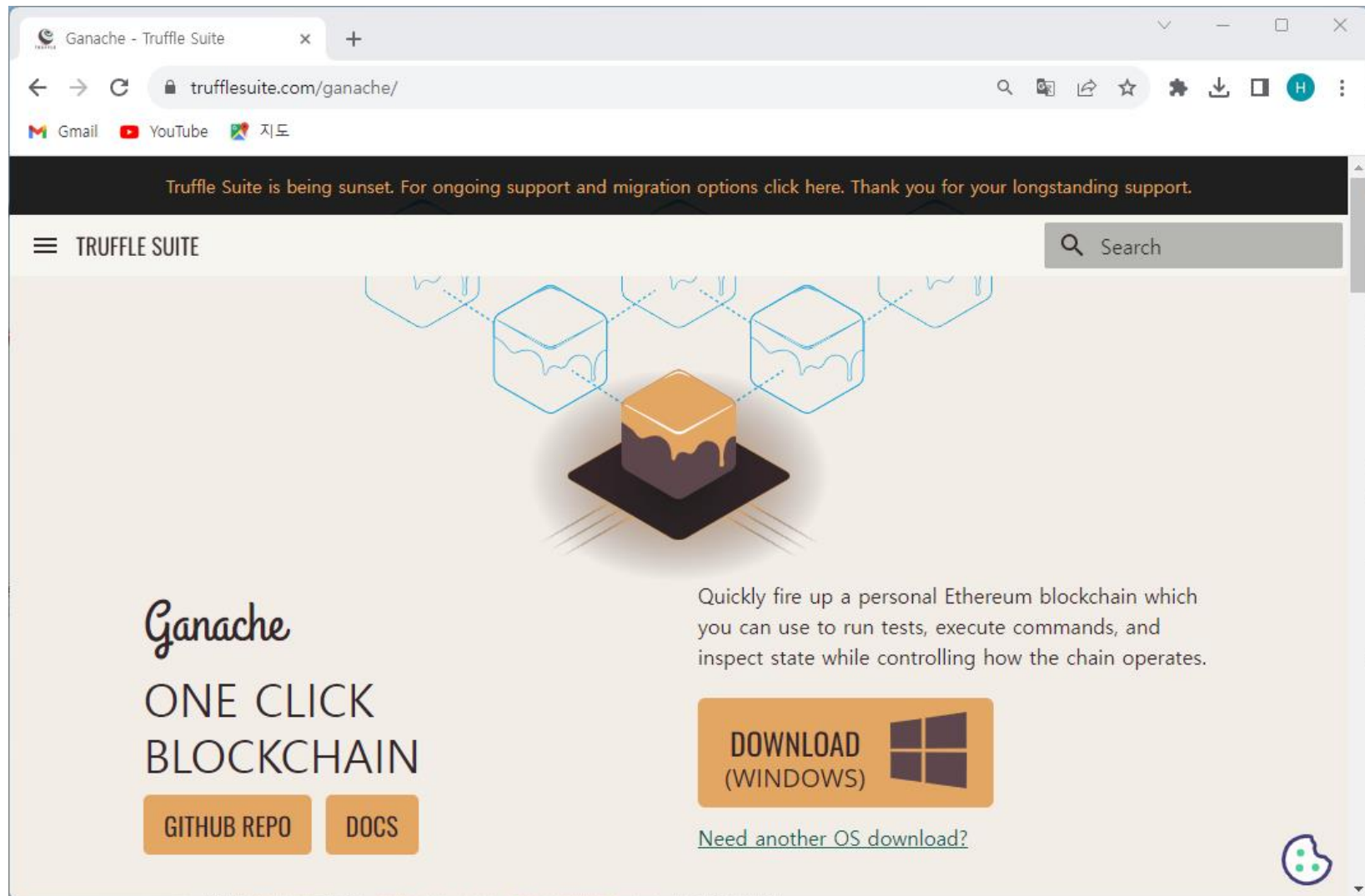
JavaScript [Copy to clipboard](#)

Learn more what Node.js is able to offer with our [Learning materials](#).

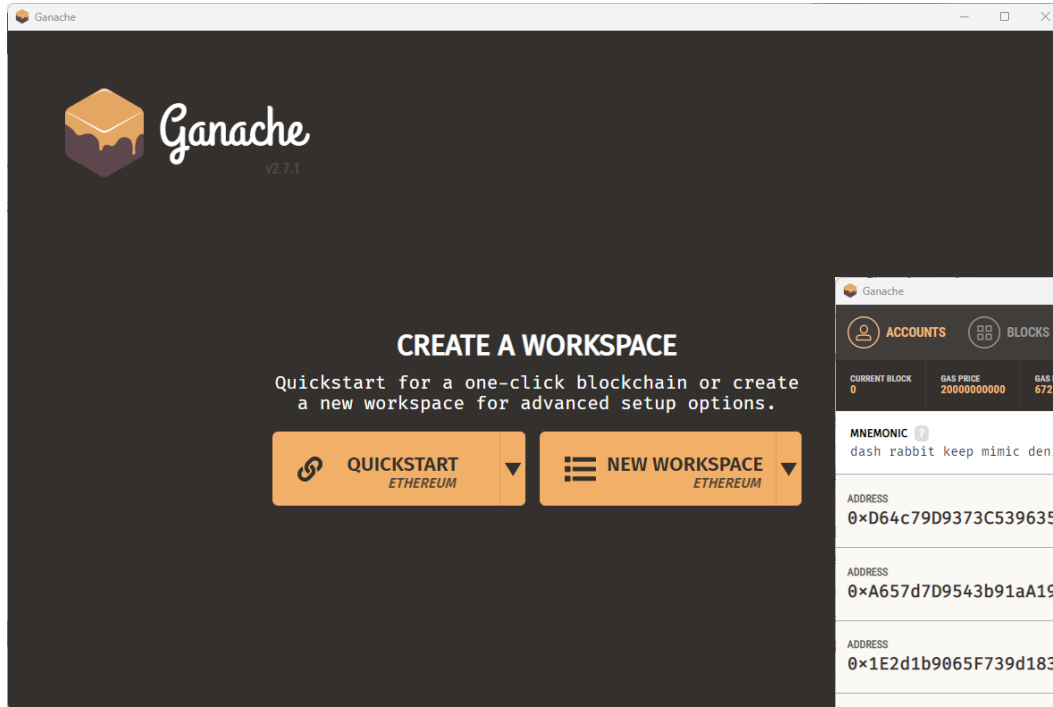
- Truffle 설치 (<https://archive.trufflesuite.com/truffle/>)



- 가나쉬 설치 (<https://archive.trufflesuite.com/ganache/>)



■ 가나쉬 실행: Quick Start



Ganache

ACCOUNTS

BLOCKS

TRANSACTIONS

CONTRACTS

EVENTS

LOGS

SEARCH FOR BLOCK NUMBERS OR TX HASHES

CURRENT BLOCK
0

GAS PRICE
20000000000

GAS LIMIT
6721975

HARDFORK
MERGE

NETWORK ID
5777

RPC SERVER
HTTP://127.0.0.1:7545

MINING STATUS
AUTOMINING

WORKSPACE
QUICKSTART

SAVE

SWITCH

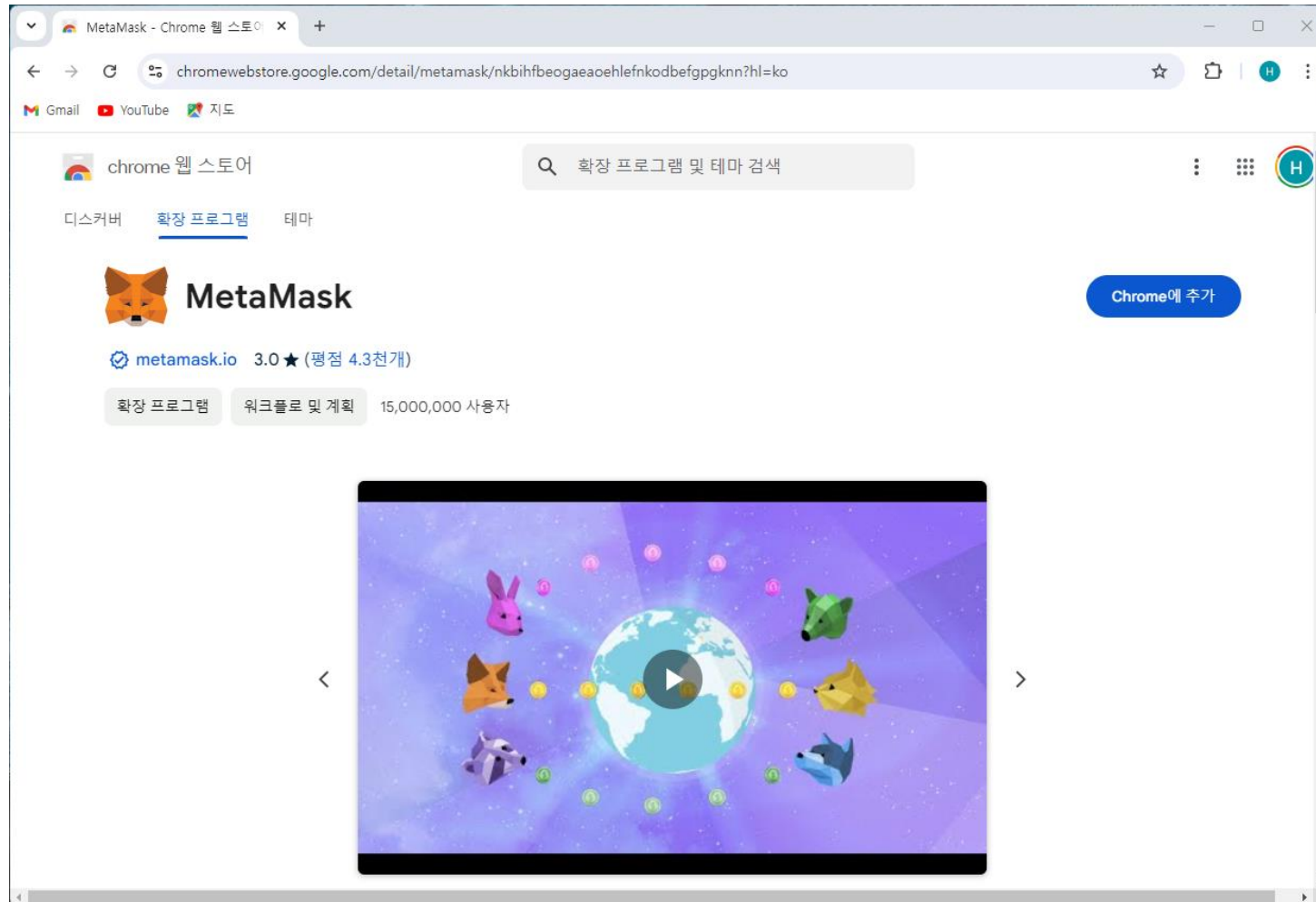
MNEMONIC ⓘ
dash rabbit keep mimic denial sibling game erosion animal produce scorpion misery

HD PATH
m/44'/60'/0'/0'/account_index

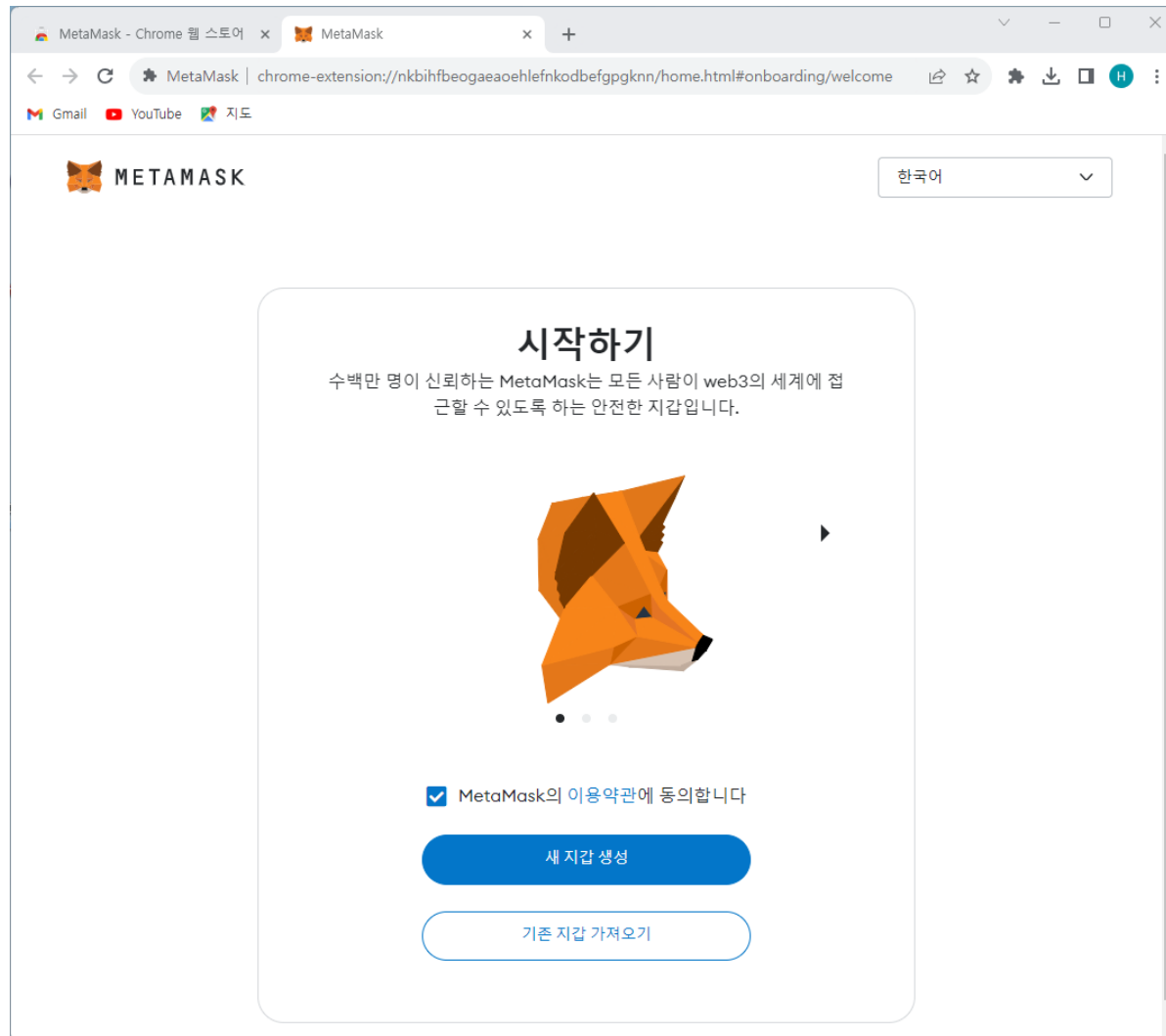
ADDRESS 0xD64c79D9373C539635b3C174206b110adf6E02CE	BALANCE 100.00 ETH	TX COUNT 0	INDEX 0	
ADDRESS 0xA657d7D9543b91aA1903b184611c521013e03467	BALANCE 100.00 ETH	TX COUNT 0	INDEX 1	
ADDRESS 0x1E2d1b9065F739d183521Efc5d0e9Cb812a7dF95	BALANCE 100.00 ETH	TX COUNT 0	INDEX 2	
ADDRESS 0x6c51A9E01A65c30234165cE1a29cBB32f54bF228	BALANCE 100.00 ETH	TX COUNT 0	INDEX 3	
ADDRESS 0xf9B9dEac32D7309C75fe4ECc587370CF253bBbb7	BALANCE 100.00 ETH	TX COUNT 0	INDEX 4	
ADDRESS 0x0eEC85d09eb30A9196B1A6BdBb4292484b34C173	BALANCE 100.00 ETH	TX COUNT 0	INDEX 5	
ADDRESS 0x1f0bb5C04182527A3AC3a0a037186FFaA0dfdF28	BALANCE 100.00 ETH	TX COUNT 0	INDEX 6	

■ 메타마스크 설치

(<https://chromewebstore.google.com/detail/metamask/nkbihfbeogaeaoehlefnkodbefgpgknn>)

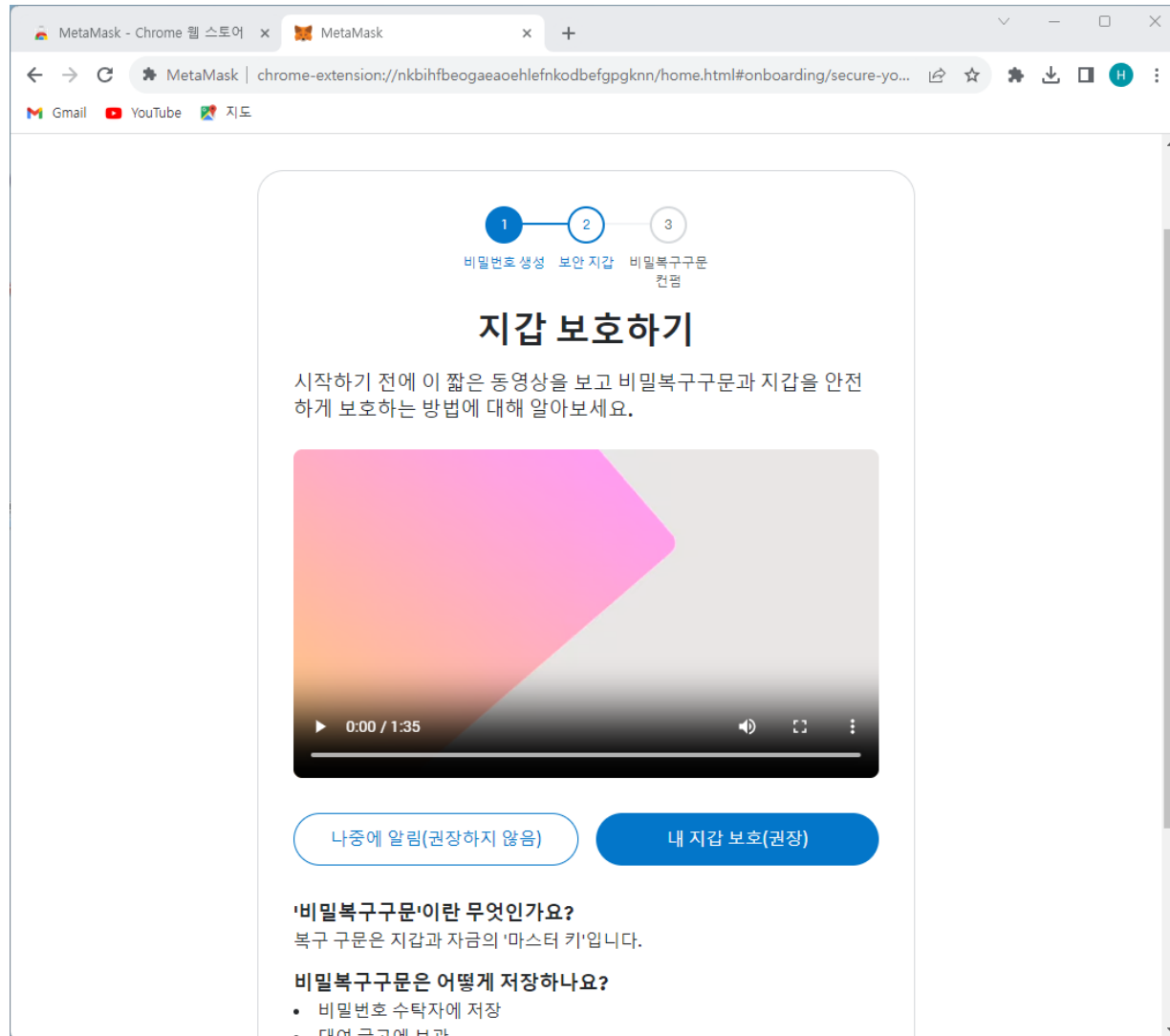


■ 메타마스크 설치



■ 메타마스크 설치

■ 메타마스크 설치



■ 메타마스크 설치

MetaMask - Chrome 웹 스토어 x MetaMask

MetaMask | chrome-extension://nkbihfboegaeaoehlefnkodbefgpgknn/home.html#onboardi

Gmail YouTube 지도

1 2 3

비밀번호 생성 보안 지갑 비밀복구구문


컨펌

비밀복구구문 기록

이 12단어 비밀복구구문을 기록하고 본인만 접근 가능한 만
장소에 저장하세요.

팁:

- 비밀번호 수탁자에 저장
- 대여 금고에 보관.
- 적어서 여러 비밀 장소에 보관하세요.



다른 사람이 이 화면을 보고 있지는 않은지 확인하세요.

비밀복구구문 공개

MetaMask - Chrome 웹 스토어 x MetaMask

MetaMask | chrome-extension://nkbihfboegaeaoehlefnkodbefgpgknn/home.html#onboarding/confirm-re...

Gmail YouTube 지도

METAMASK

한국어

1 2 3

비밀번호 생성 보안 지갑 비밀복구구문

컨펌

비밀복구구문 컨펌

비밀복구구문 확인

1. useless 2. tattoo 3.

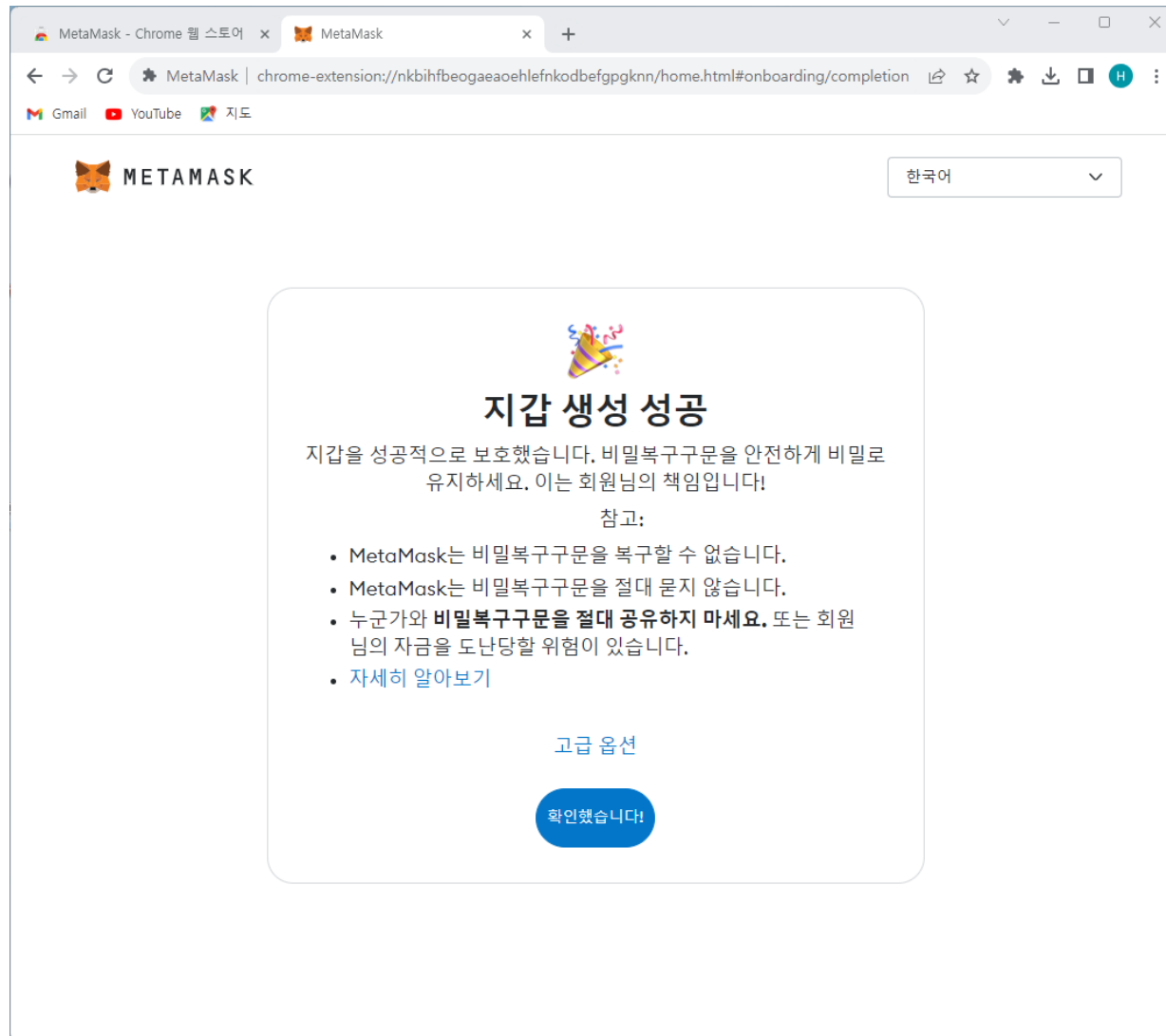
4. 5. segment 6. shop

7. fluid 8. 9. jeans

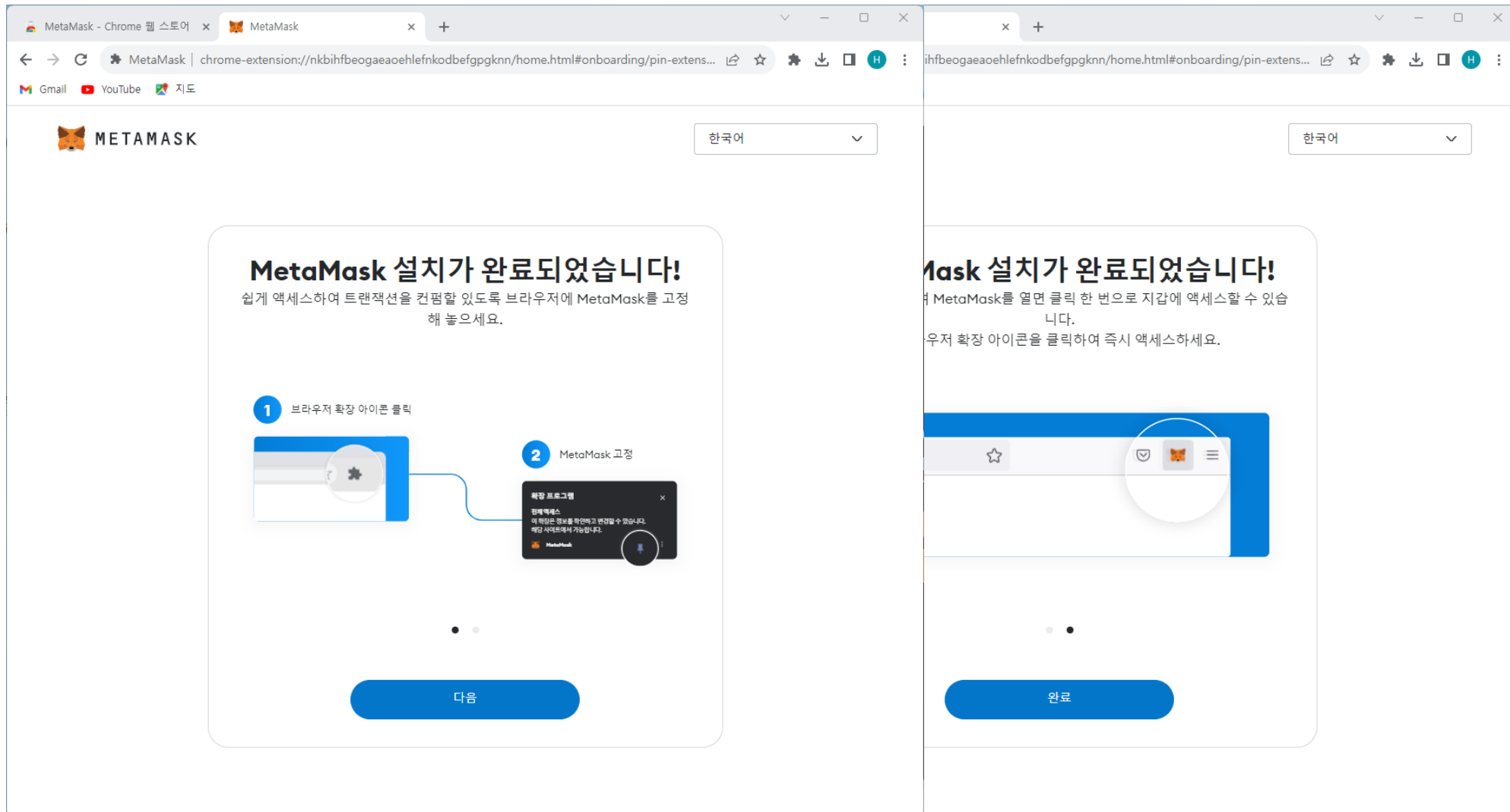
10. shadow 11. impulse 12. write

컨펌

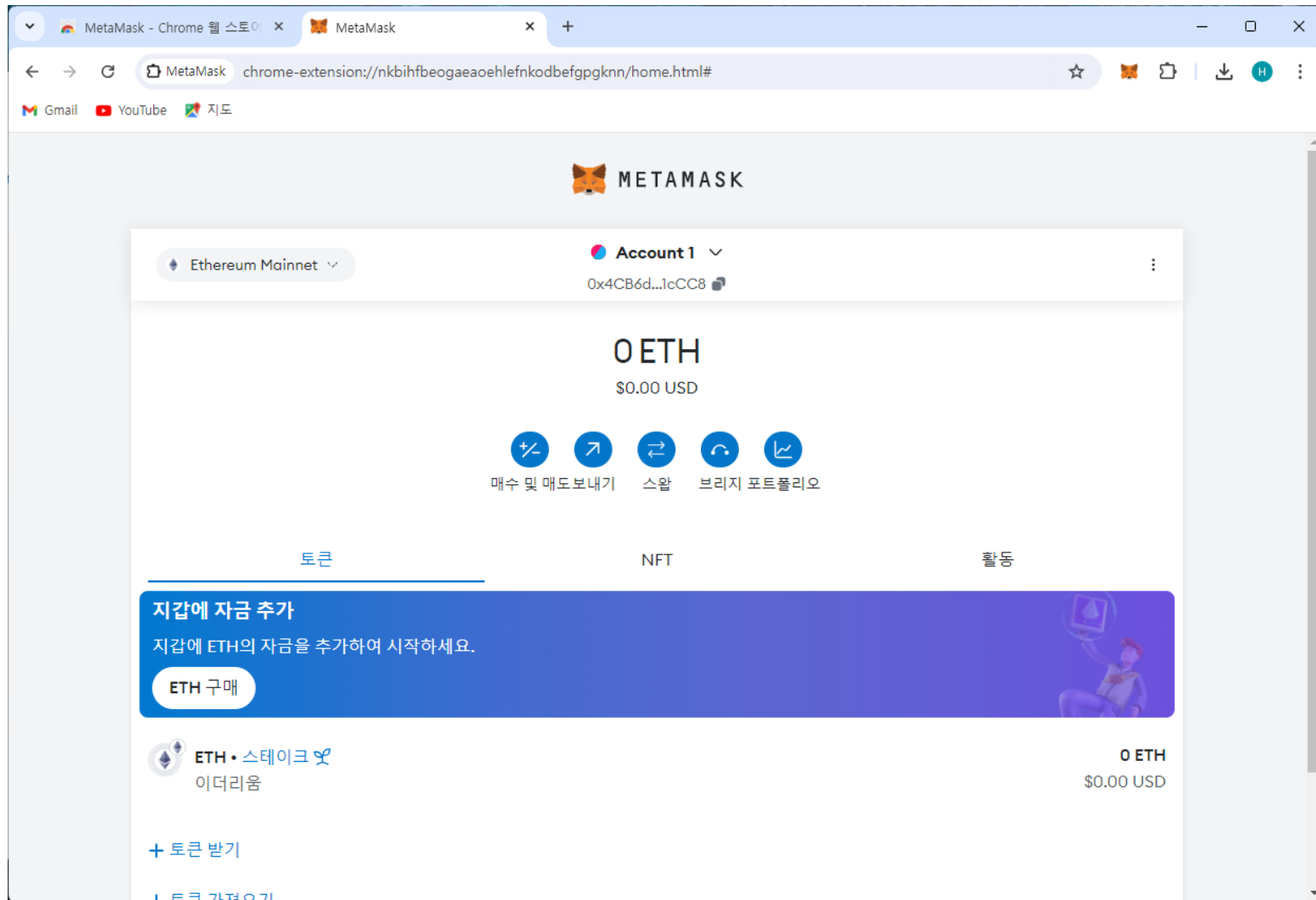
■ 메타마스크 설치



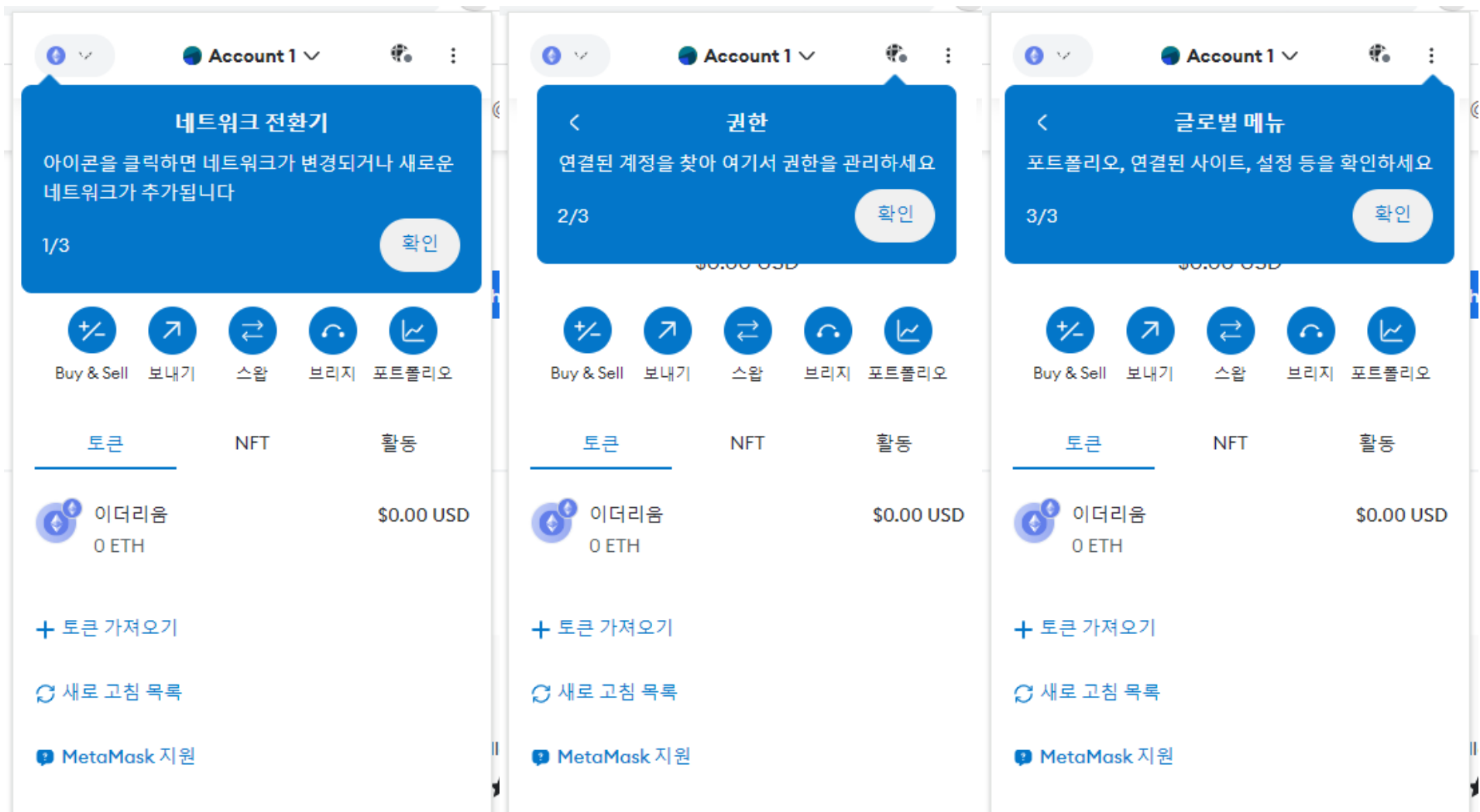
■ 메타마스크 브라우저에 고정



■ 메타마스크



■ 메타마스크



■ CMD

```
C:\Windows\system32\cmd
C:\Users\user\Work\blockchain\BlindAuction-Dapp\BlindAuction-Dapp\blindauction-contract>cd ..

C:\Users\user\Work\blockchain\BlindAuction-Dapp\BlindAuction-Dapp>node -v
v20.9.0

C:\Users\user\Work\blockchain\BlindAuction-Dapp\BlindAuction-Dapp>npm -v
10.1.0

C:\Users\user\Work\blockchain\BlindAuction-Dapp\BlindAuction-Dapp>cd blindauction-contract

C:\Users\user\Work\blockchain\BlindAuction-Dapp\BlindAuction-Dapp\blindauction-contract>truffle migrate
This version of μWS is not compatible with your Node.js build:

Error: The specified module could not be found.
\\?\C:\Users\user\AppData\Roaming\npm\node_modules\truffle\node_modules\ganache\node_modules\@trufflesuite\uws-js-unoffi
cial\binaries\uws_win32_x64_115.node
Falling back to a NodeJS implementation; performance may be degraded.

Compiling your contracts...
=====
> Compiling .\contracts\BlindAuction.sol
> Compiling .\contracts\Migrations.sol
> Compilation warnings encountered:

Warning: SPDX license identifier not provided in source file. Before publishing, consider adding a comment containin
g "SPDX-License-Identifier: <SPDX-License>" to each source file. Use "SPDX-License-Identifier: UNLICENSED" for non-open-
source code. Please see https://spdx.org for more information.
--> project:/contracts/Migrations.sol
```

■ CMD

```
C:\Windows\system32\cmd
2_deploy_contracts.js
=====

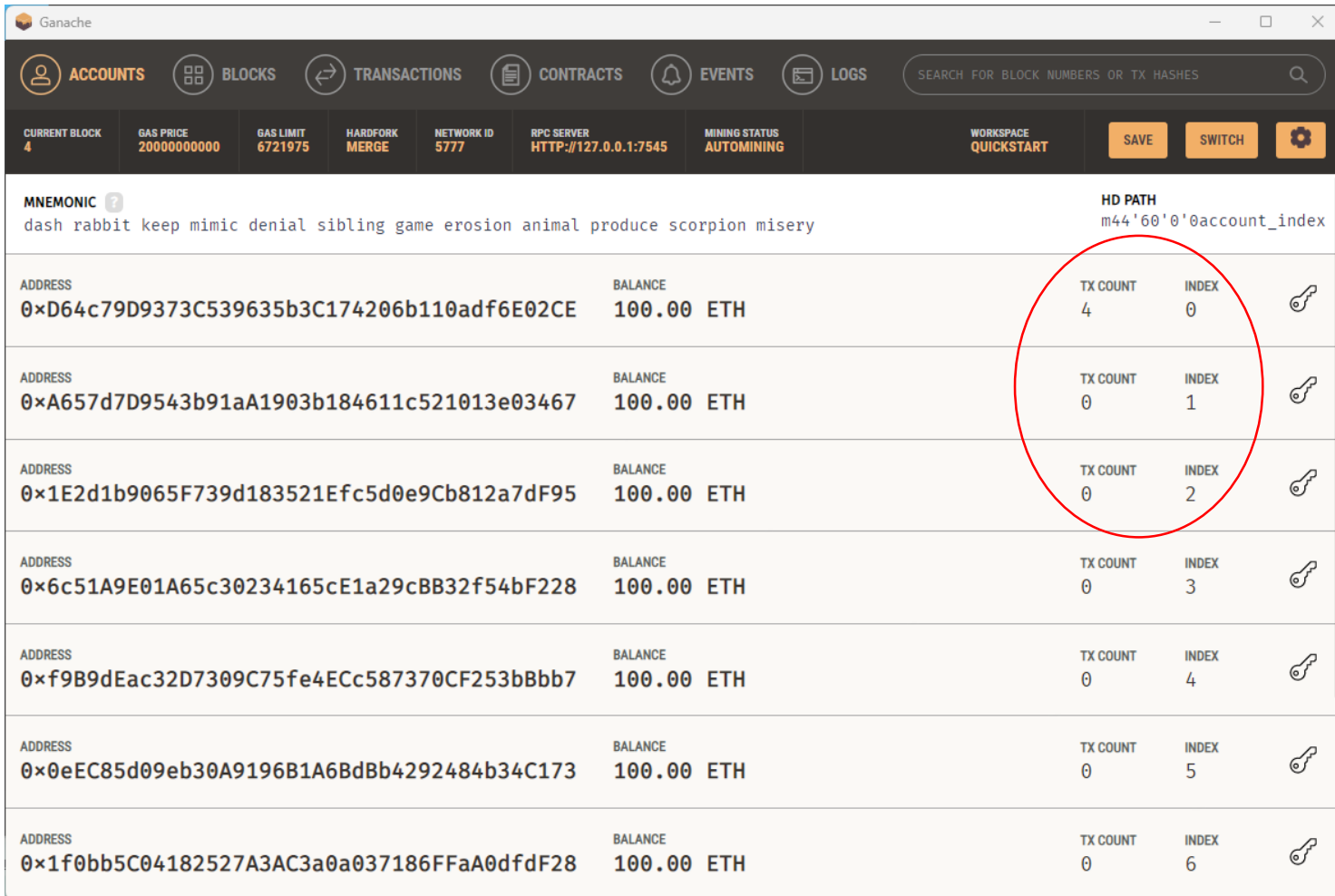
Deploying 'BlindAuction'
-----
> transaction hash: 0x56d5e44648e964c3ec3fea9e2d8f23c718fde8dede51859b1981cef8598e32db
> Blocks: 0 Seconds: 0
> contract address: 0x1e21aCc07DC988c620f1f3Ae50f86bF01989d3CD
> block number: 3
> block timestamp: 1698378409
> account: 0xF57546064Bd12D621AAA3626b8A5373f4D474F20
> balance: 99.995398102826411992
> gas used: 1109273 (0x10ed19)
> gas price: 3.179049676 gwei
> value sent: 0 ETH
> total cost: 0.003526433971245548 ETH

> Saving migration to chain.
> Saving artifacts
-----
> Total cost: 0.003526433971245548 ETH

Summary
=====
> Total deployments: 2
> Final cost: 0.004451480971245548 ETH

C:\Users\user\Work\blockchain\BlindAuction-Dapp\BlindAuction-Dapp\blindauction-contract>
```

■ 스마트컨트랙트 배포후 가나쉬 상태



ACCOUNTS BLOCKS TRANSACTIONS CONTRACTS EVENTS LOGS

SEARCH FOR BLOCK NUMBERS OR TX HASHES

CURRENT BLOCK 4 GAS PRICE 20000000000 GAS LIMIT 6721975 HARDFORK MERGE NETWORK ID 5777 RPC SERVER HTTP://127.0.0.1:7545 MINING STATUS AUTOMINING WORKSPACE QUICKSTART SAVE SWITCH

MNEMONIC ? dash rabbit keep mimic denial sibling game erosion animal produce scorpion misery

HD PATH m44'60'0'0account_index

ADDRESS	BALANCE	TX COUNT	INDEX
0xD64c79D9373C539635b3C174206b110adf6E02CE	100.00 ETH	4	0
0xA657d7D9543b91aA1903b184611c521013e03467	100.00 ETH	0	1
0x1E2d1b9065F739d183521Efc5d0e9Cb812a7dF95	100.00 ETH	0	2
0x6c51A9E01A65c30234165cE1a29cBB32f54bF228	100.00 ETH	0	3
0xf9B9dEac32D7309C75fe4ECc587370CF253bBbb7	100.00 ETH	0	4
0x0eEC85d09eb30A9196B1A6BdBb4292484b34C173	100.00 ETH	0	5
0x1f0bb5C04182527A3AC3a0a037186FFaA0dfdF28	100.00 ETH	0	6

■ CMD

```
npm start
-----
> Total cost:      0.003526433971245548 ETH

Summary
=====
> Total deployments: 2
> Final cost:       0.004451480971245548 ETH

C:\Users\user\Work\blockchain\BlindAuction-Dapp\BlindAuction-Dapp\blindauction-contract>cd ..
C:\Users\user\Work\blockchain\BlindAuction-Dapp\BlindAuction-Dapp>cd blindauction-app
C:\Users\user\Work\blockchain\BlindAuction-Dapp\BlindAuction-Dapp\blindauction-app>npm install
added 58 packages, and audited 59 packages in 491ms

8 packages are looking for funding
  run `npm fund` for details

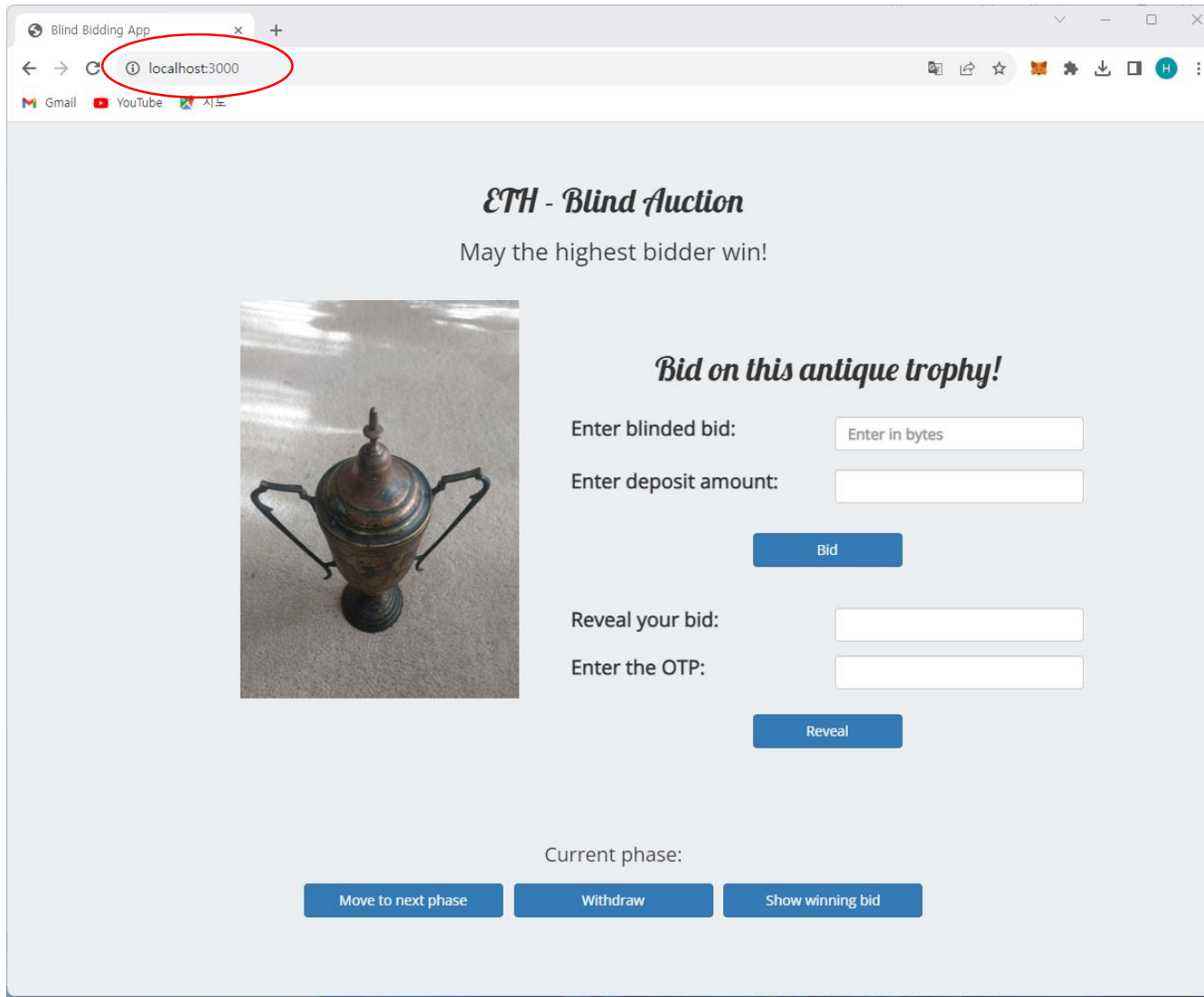
found 0 vulnerabilities

C:\Users\user\Work\blockchain\BlindAuction-Dapp\BlindAuction-Dapp\blindauction-app>npm start

> ballot-app@1.0.0 start
> node index.js

Auction Dapp listening on port 3000!
```

- 브라우저에서 localhost:3000 접속



Blind Bidding App

localhost:3000

ETH - Blind Auction

May the highest bidder win!

Bid on this antique trophy!

Enter blinded bid:

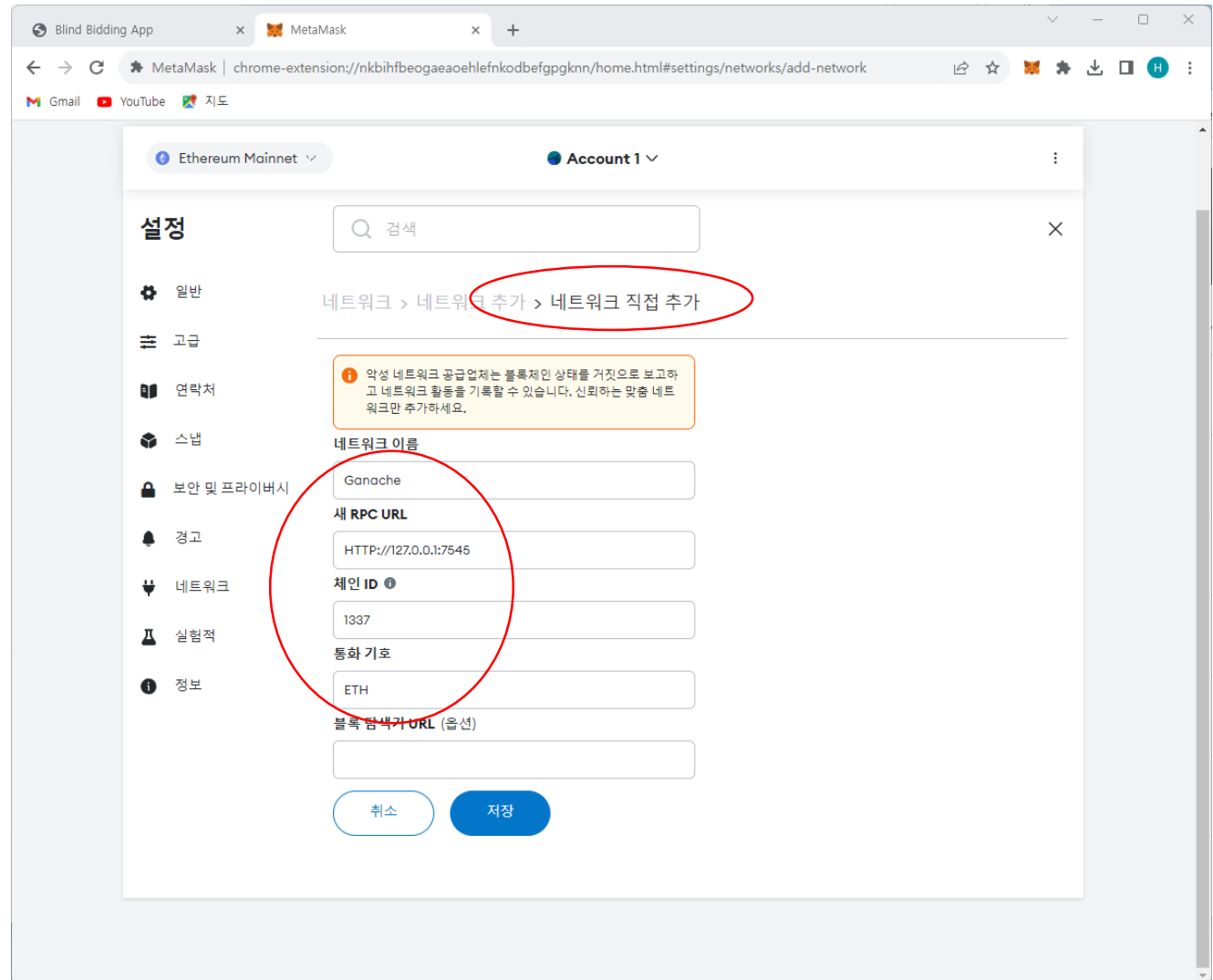
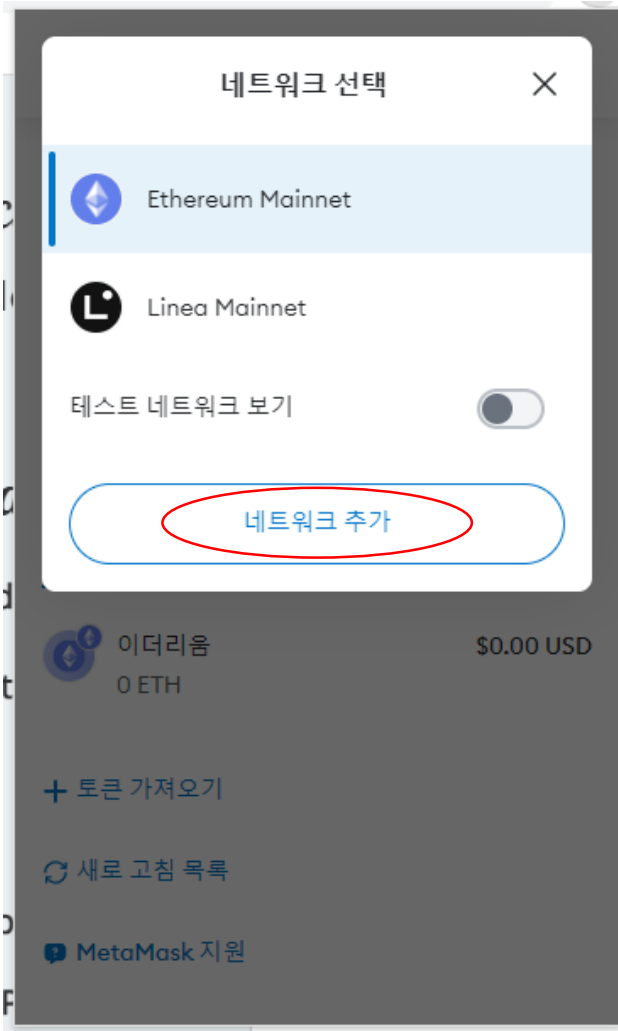
Enter deposit amount:

Reveal your bid:

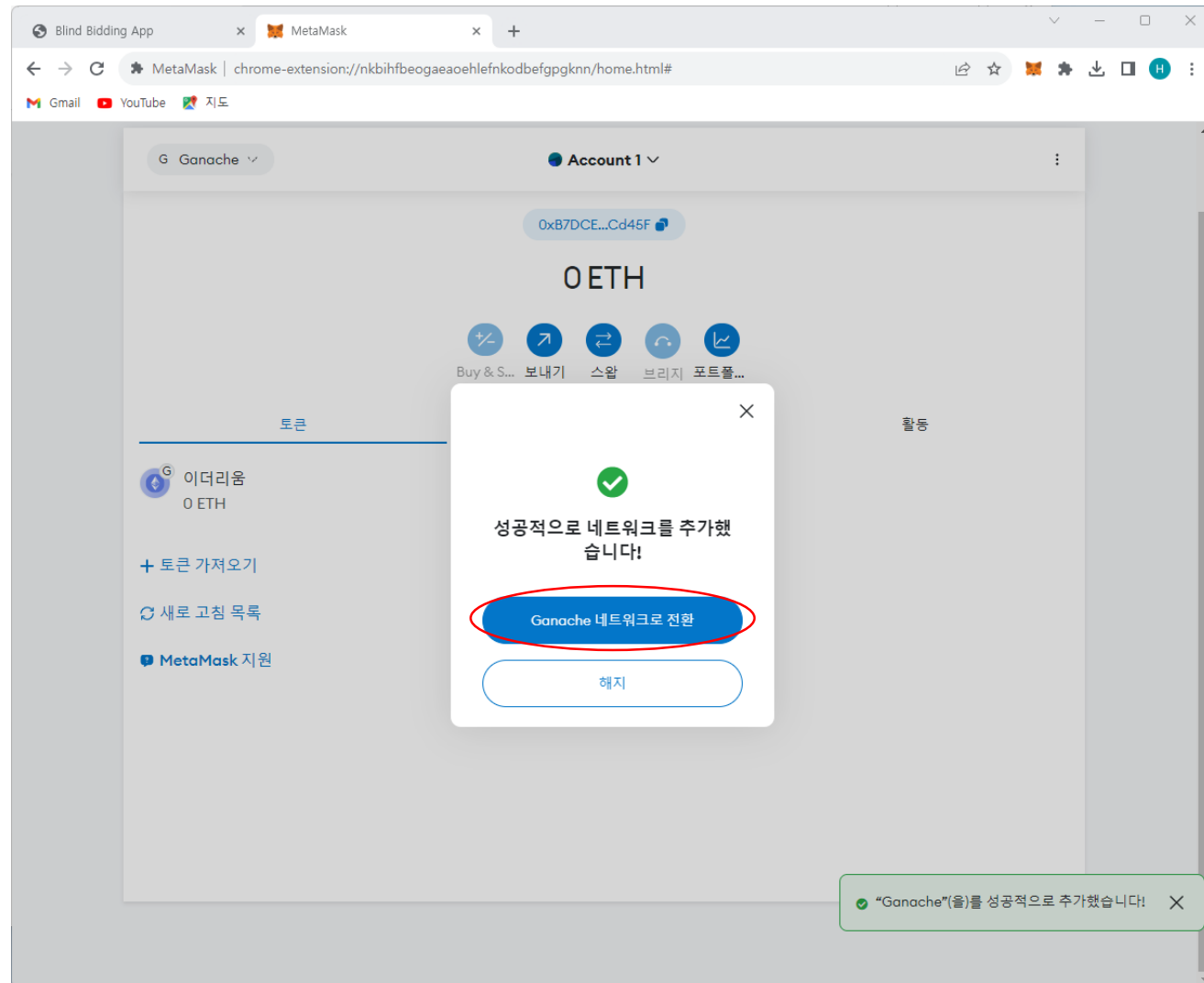
Enter the OTP:

Current phase:

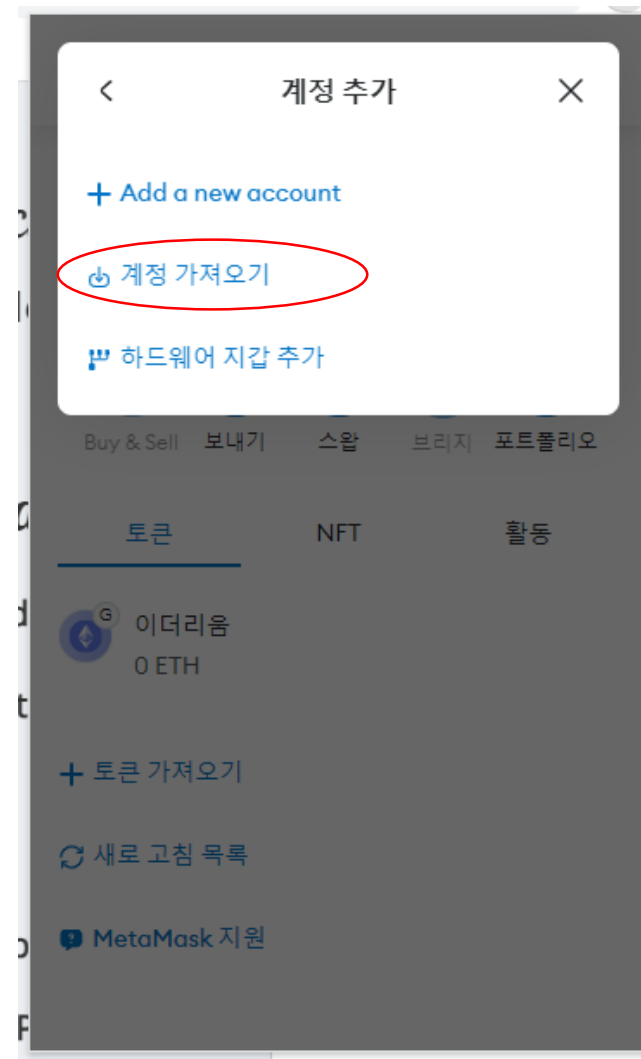
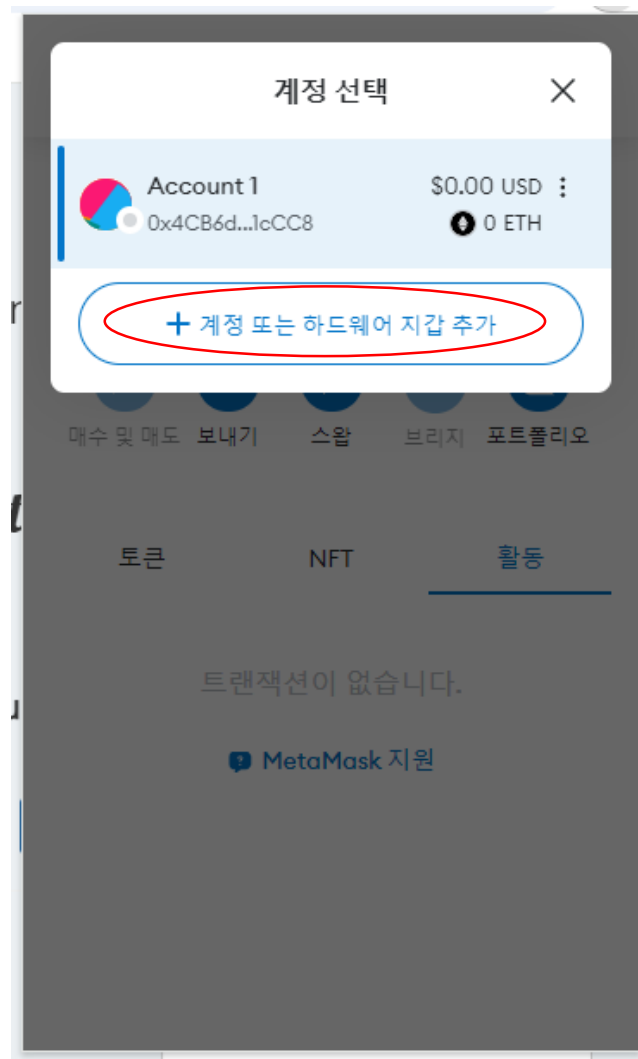
■ 메타마스크를 가나쉬 네트워크에 연결



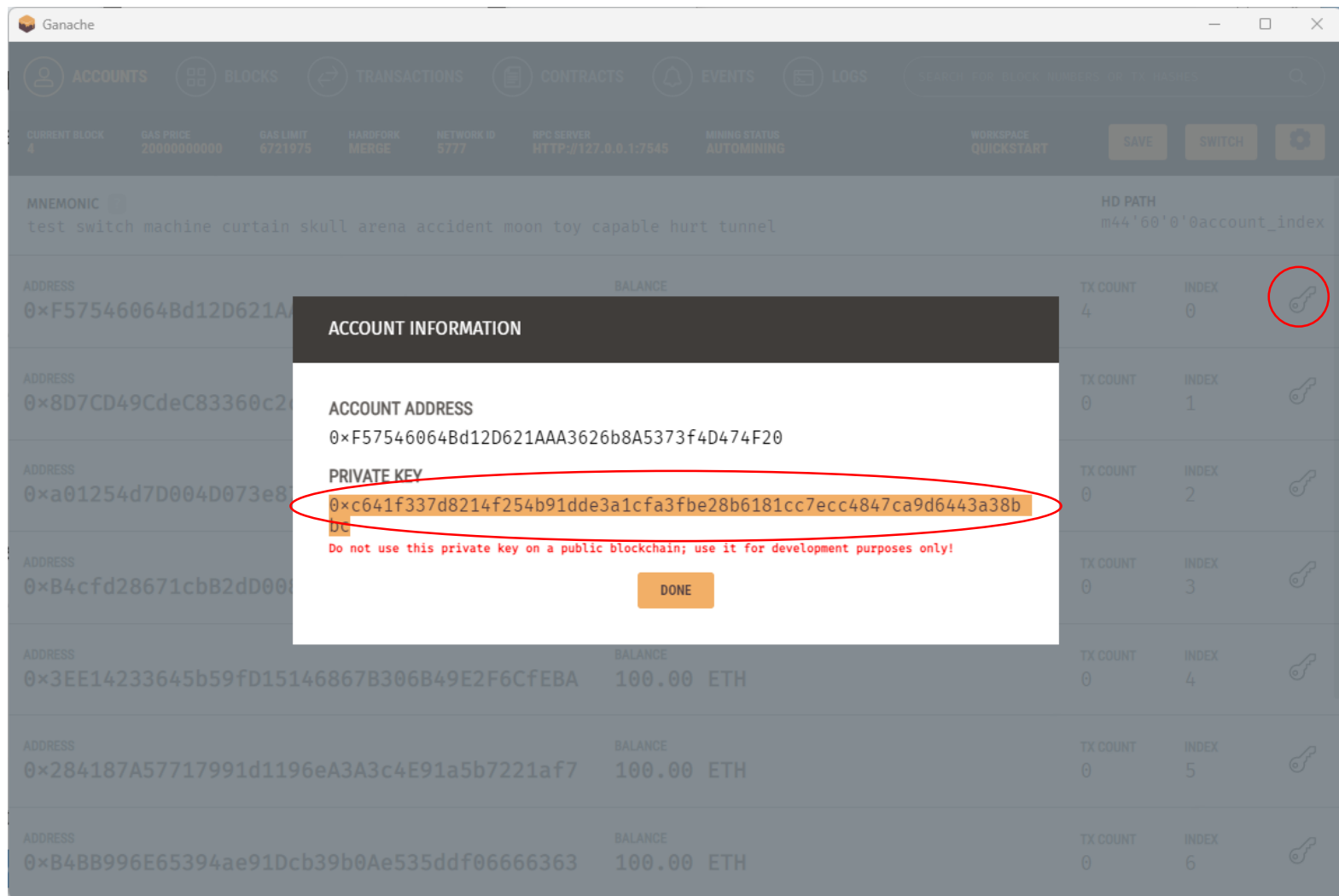
■ 메타마스크를 가나쉬 네트워크에 연결



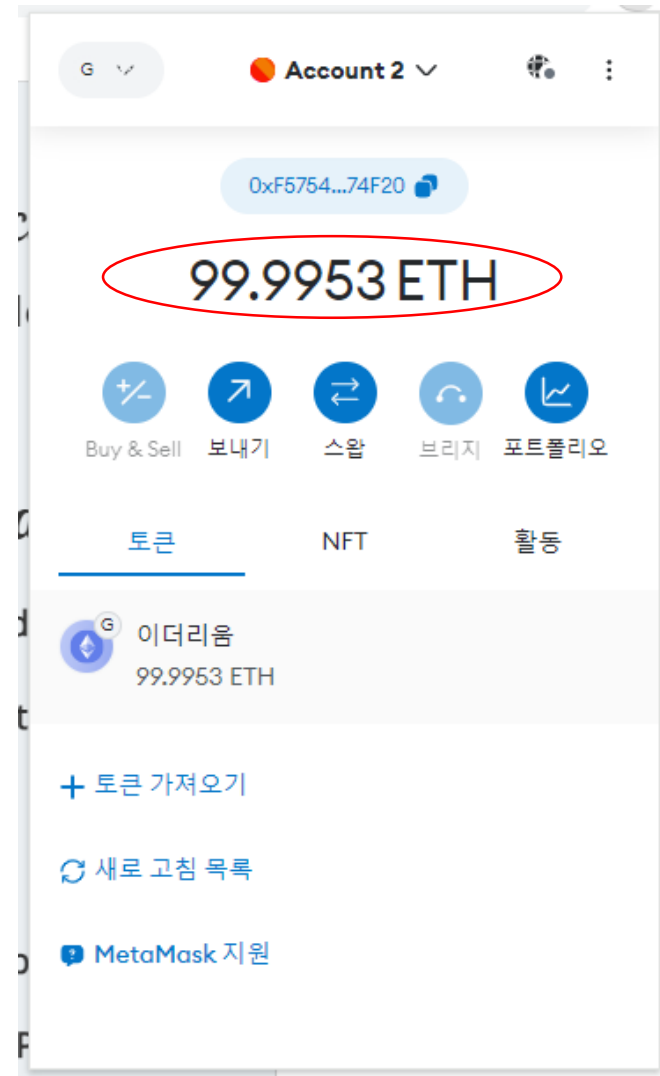
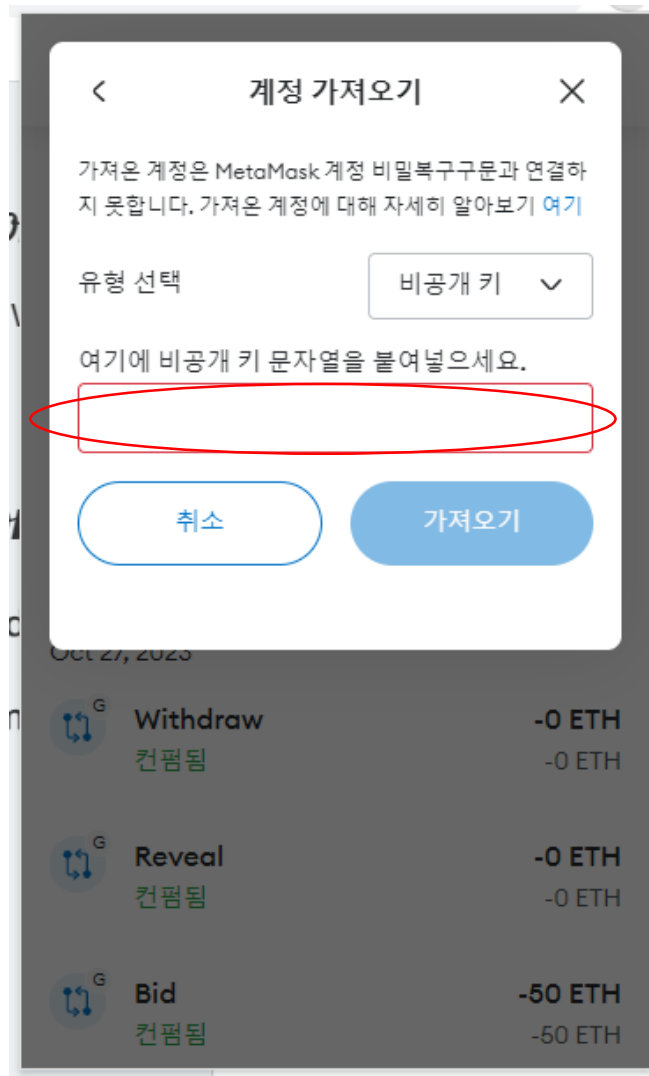
■ 메타마스크에서 가나쉬 계정 가져오기



■ 메타마스크에서 가나쉬 계정 가져오기



■ 메타마스크에서 가나쉬 계정 가져오기



연결 안됨

■ 가나쉬 계정 localhost:3000 에 연결

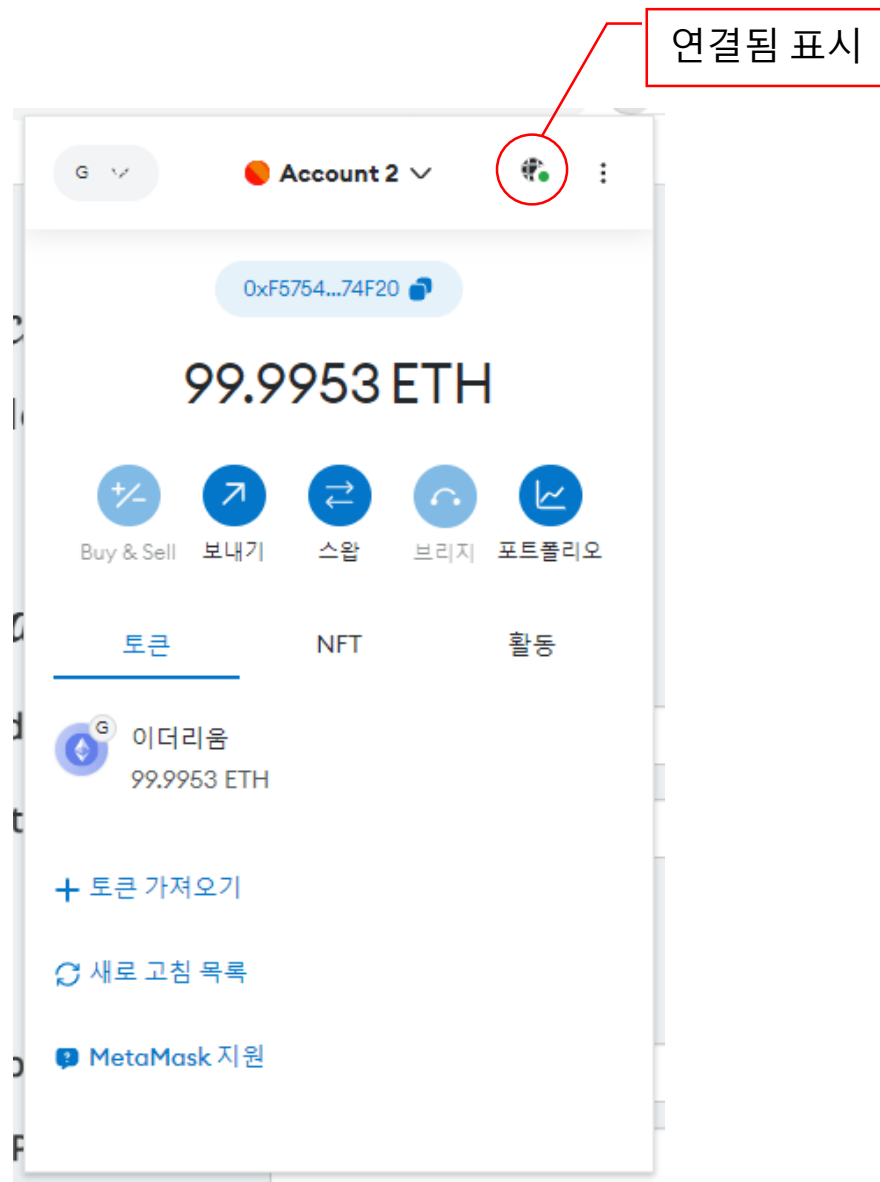
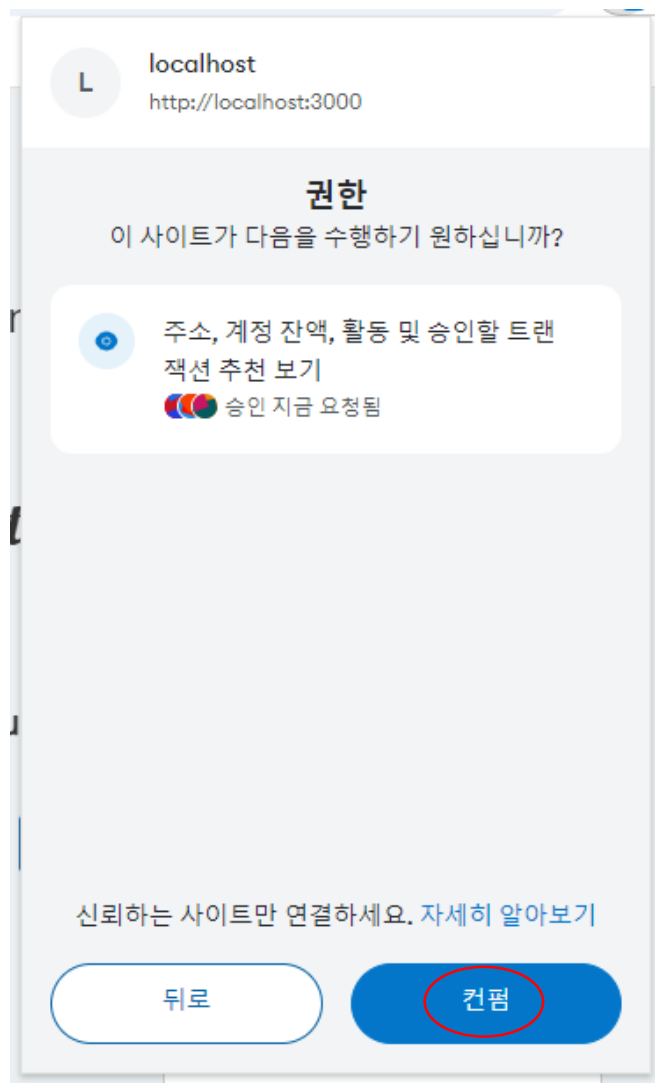
The image displays three sequential screenshots from a web application interface, illustrating the connection process for a Ganache account.

Left Screenshot (Ganache Interface): Shows the top navigation bar with "Account 2" selected. A red circle highlights the connection icon (a globe with a plug) in the top right corner.

Middle Screenshot (Web Application Connection Screen): The title is "localhost:3000". The text reads: "MetaMask가 이 사이트와 연결되어 있지 않습니다. 이 사이트에서 계속 사용하고자 하는 계정을 선택하세요." (MetaMask is not connected to this site. Please select an account you want to continue using on this site.) A blue button labeled "계정 연결" (Connect Account) is at the bottom.

Right Screenshot (MetaMask Account Selection Screen): The title is "localhost" with the URL "http://localhost:3000". The heading is "MetaMask로 연결" (Connect with MetaMask) and "계정 선택" (Select Account). Below, there are four accounts listed: "Account 1 (0x4cb6d...1ccc8) 0 ETH", "Account 2 (0xd64c7...e02...) 100 ETH", "Account 3 (0xa657d...034...) 100 ETH", and "Account 4 (0x1e2d1...7df95) 100 ETH". A red circle highlights the selection checkboxes for "Account 2", "Account 3", and "Account 4". At the bottom, there are buttons for "취소" (Cancel) and "다음" (Next).

■ 가나쉬 계정 localhost:3000 에 연결



■ 테스트

- Account2가 [Move to next phase] 버튼 클릭하여 Bidding 단계로 변경

- Account3가 입찰(예치금: 50이더)

- 입찰가 20(이더), 비밀번호로 만든 해시값 입력

- 블라인드 입찰값:

- 0x60ba2a76256b7bcc6d87ecd1daa6c86d3f9f523dabc2b62fce23a855827d3b34

- 예치금: 50

- Account4가 입찰(예치금: 50이더)

- 입찰가 30(이더), 비밀번호로 만든 해시값 입력

- 블라인드 입찰값:

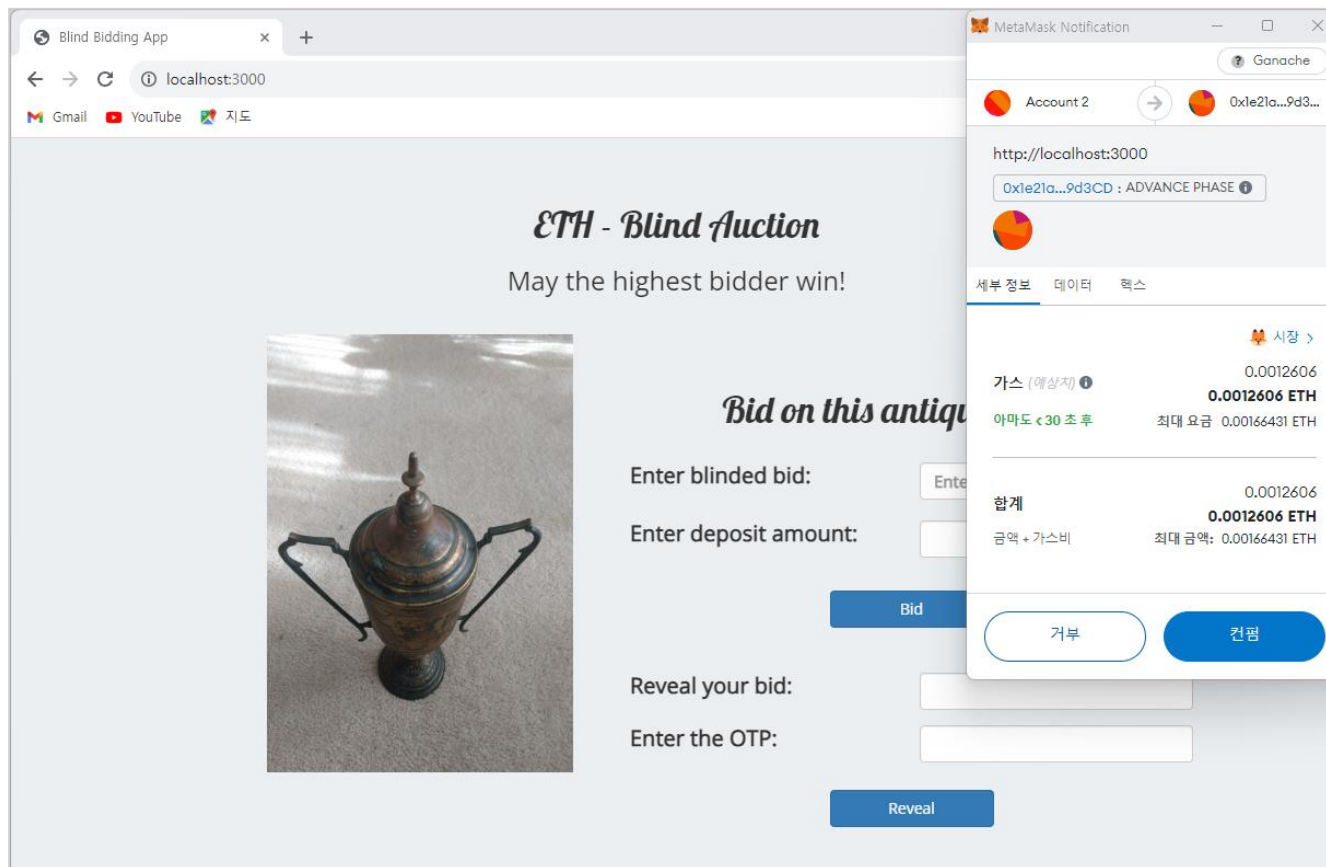
- 0x4a4ed630c9ae66b1bafcce494b7148750fc65e97ea91602b10e4ffa108ad1ce8

- 예치금: 50


■ 테스트

- [illegible]

- Account2가 [Move to next phase] 클릭하여 Bidding 단계로 변경
 - 메타마스크에서 트랜잭션 컨펌




■ Bidding 단계 시작 이벤트 알림

 Bidding Started

ETH - Blind Auction

May the highest bidder win!



Bid on this antique trophy!

Enter blinded bid:

Enter in bytes

Enter deposit amount:

Bid

Reveal your bid:

Enter the OTP:

Reveal

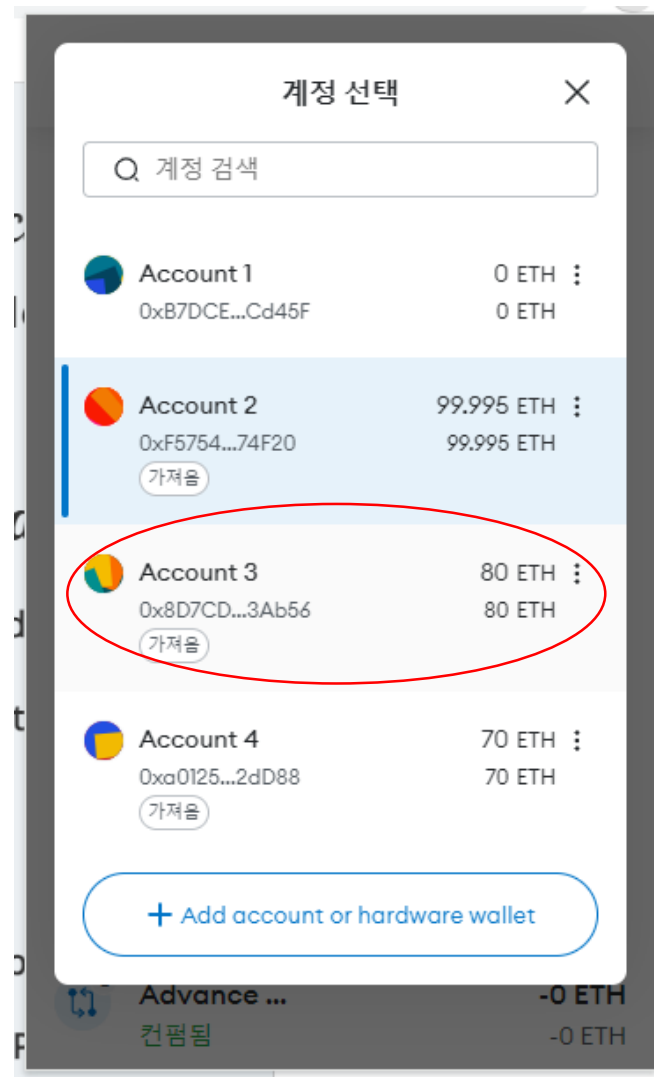
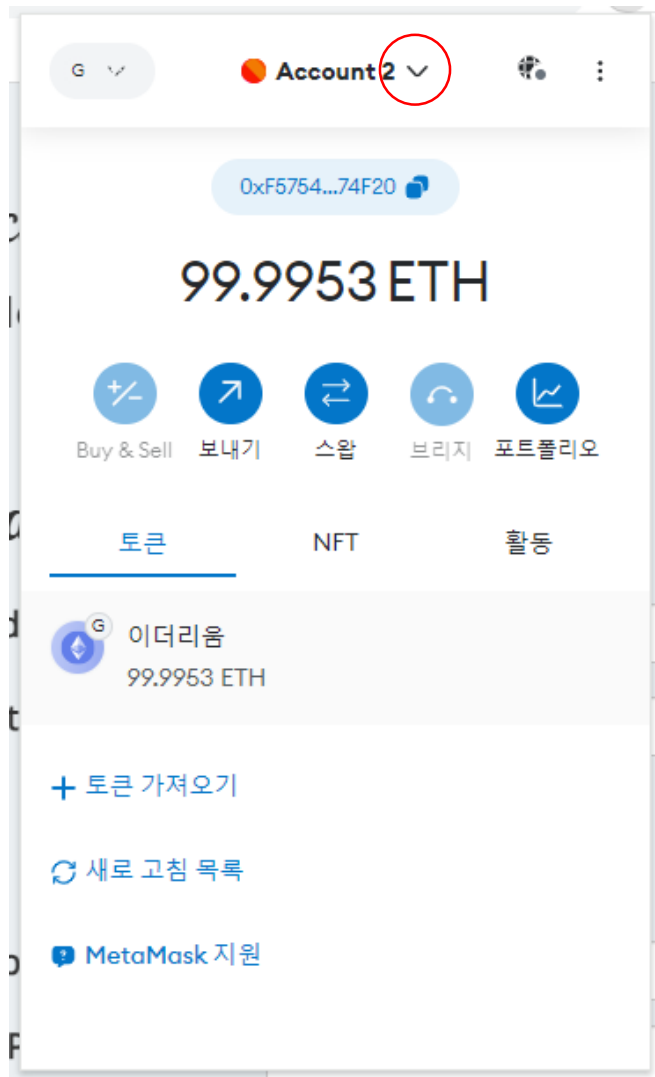
Current phase: Bidding Started

Move to next phase

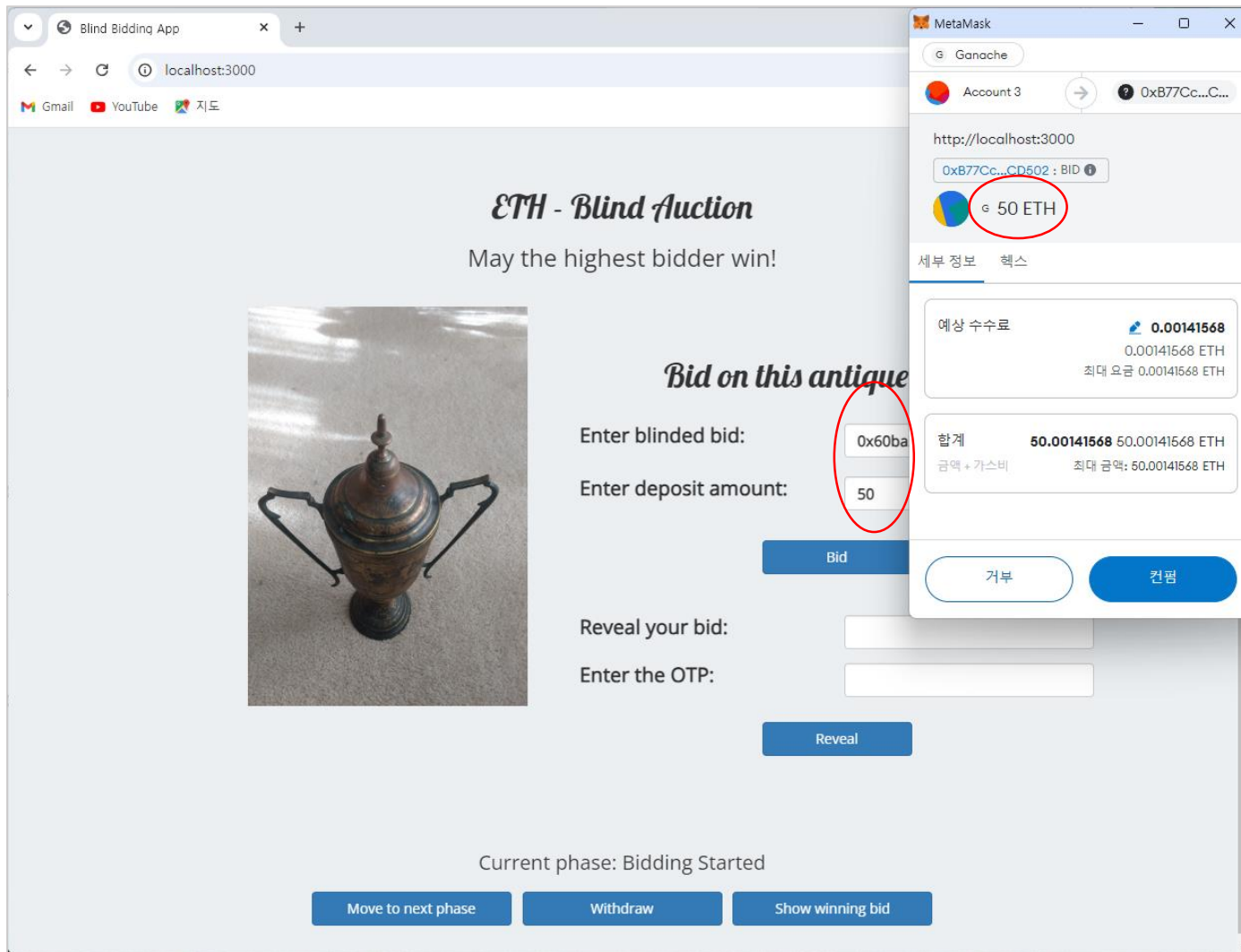
Withdraw

Show winning bid

■ 메타마스크 계정 변경



Account3 Bid에 대한 메타마스크 컨펌



The screenshot shows the 'Blind Bidding App' running on a browser at localhost:3000. The app displays an 'ETH - Blind Auction' for an antique vase. The current phase is 'Bidding Started'. A MetaMask confirmation window is open, showing the transaction details for Account 3. The transaction is a bid of 50 ETH, which is circled in red. The confirmation window also shows the estimated gas fee (0.00141568 ETH) and the total amount (50.00141568 ETH). The app interface includes fields for entering a blinded bid (0x60ba), a deposit amount (50), and an OTP. A 'Bid' button is visible, and a 'Reveal' button is at the bottom. The app also has buttons for 'Move to next phase', 'Withdraw', and 'Show winning bid'.

ETH - Blind Auction
May the highest bidder win!

Bid on this antique

Enter blinded bid: 0x60ba
Enter deposit amount: 50

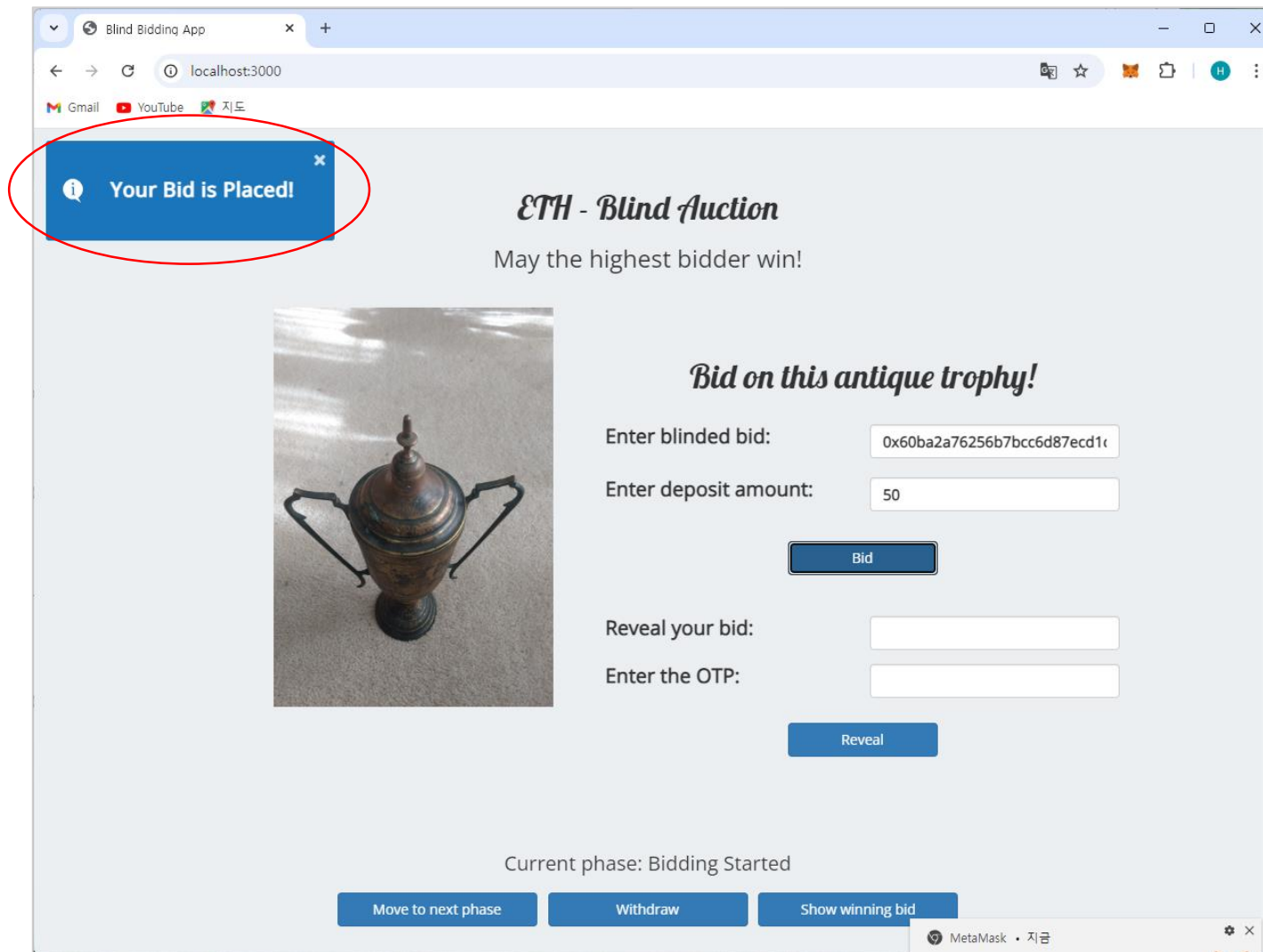
Reveal your bid:
Enter the OTP:

Current phase: Bidding Started

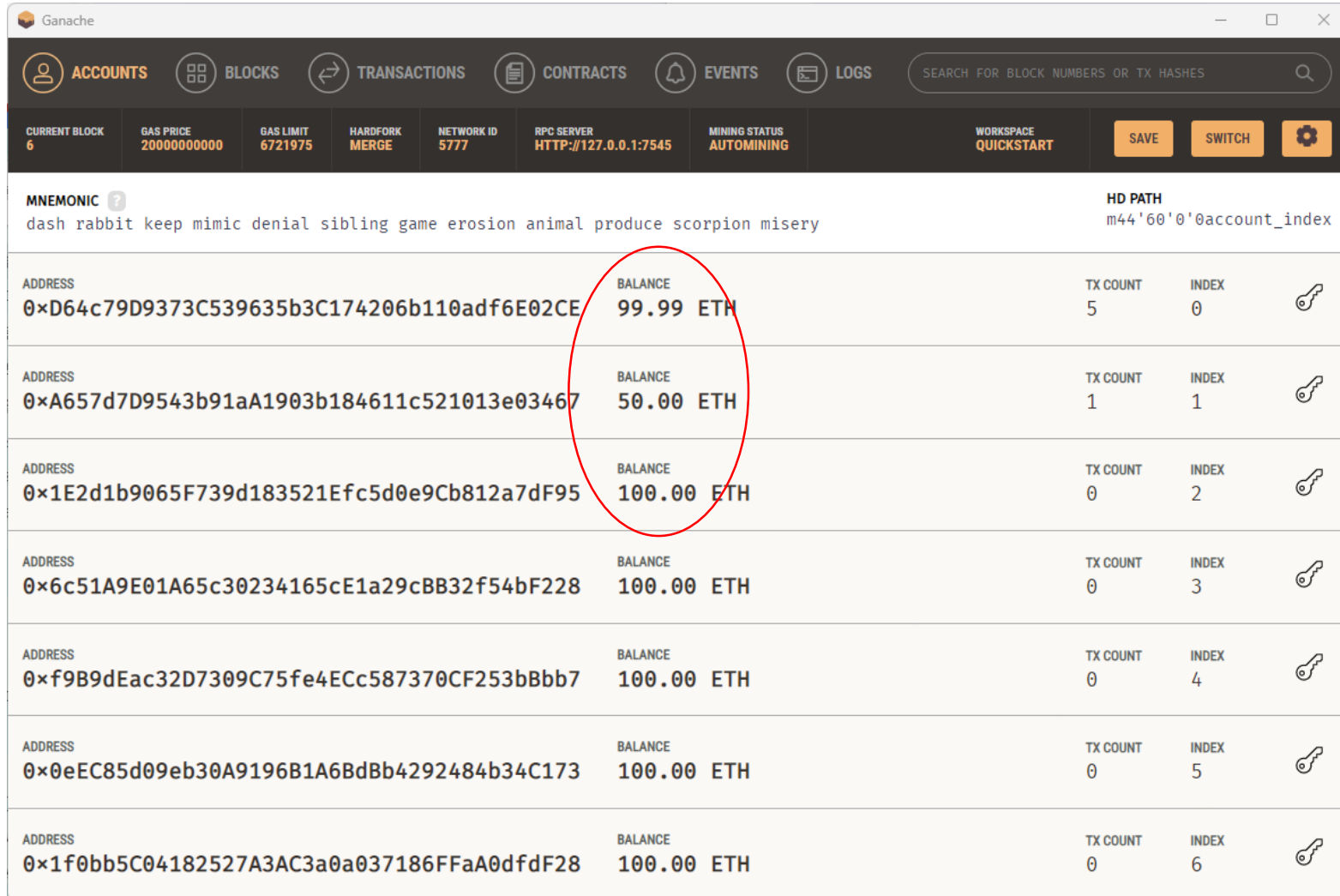
Move to next phase Withdraw Show winning bid

MetaMask
Ganache
Account 3
http://localhost:3000
0xB77Cc...CD502 : BID
50 ETH
세부 정보 hexs
예상 수수료 0.00141568
0.00141568 ETH
최대 요금 0.00141568 ETH
합계 50.00141568 50.00141568 ETH
금액 + 가스비 최대 금액: 50.00141568 ETH
거부 컨펌

Account3 Bid에 대한 메타마스크 컨펌



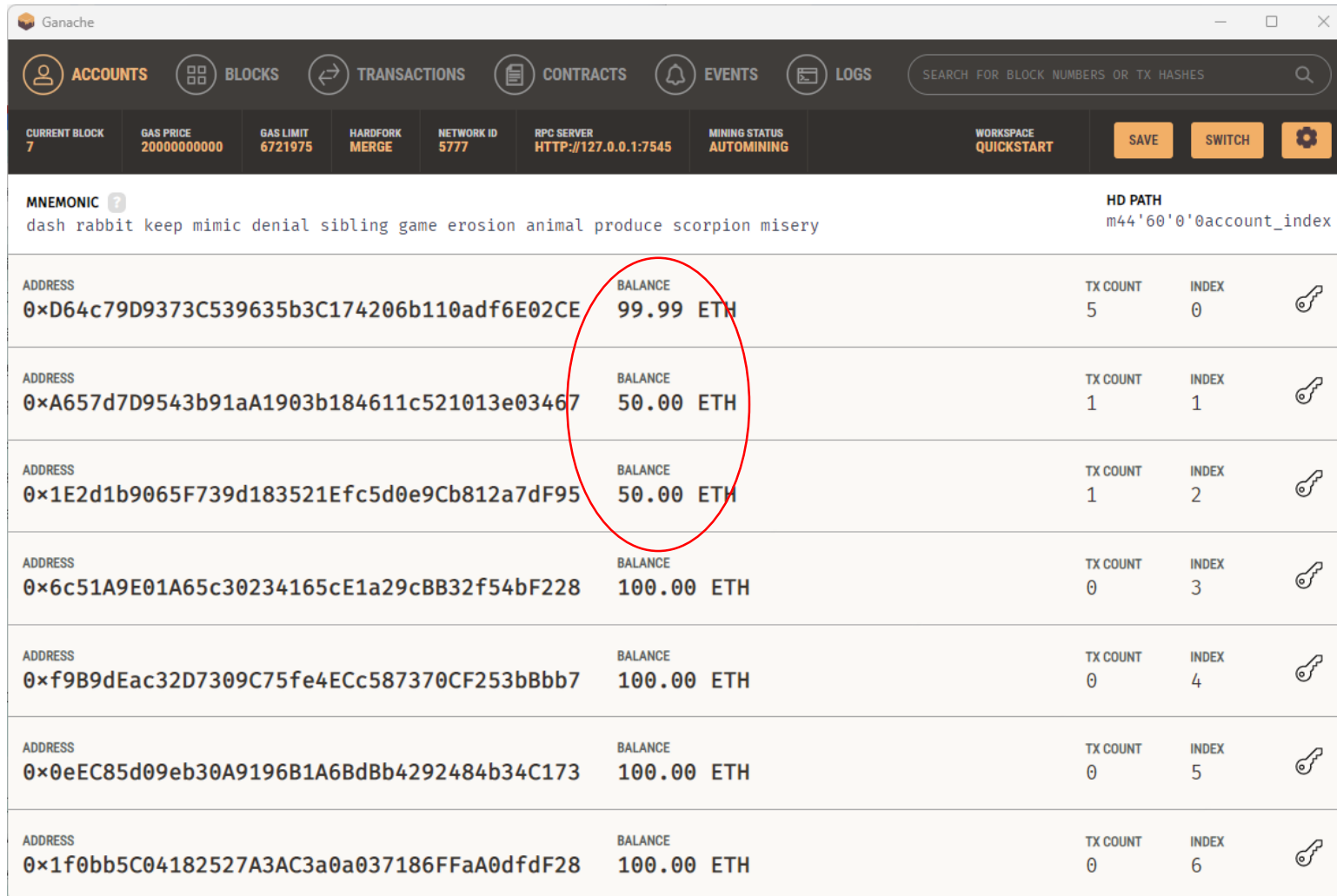
■ Account3 Bid 후 가나쉬 상태



The screenshot shows the Ganache application window. The top navigation bar includes ACCOUNTS, BLOCKS, TRANSACTIONS, CONTRACTS, EVENTS, and LOGS. Below this is a status bar with various network parameters. The main area displays a list of accounts. A red circle highlights the account with address 0xA657d7D9543b91aA1903b184611c521013e03467, which has a balance of 50.00 ETH. This account is the one that placed the bid.

ADDRESS	BALANCE	TX COUNT	INDEX
0xD64c79D9373C539635b3C174206b110adf6E02CE	99.99 ETH	5	0
0xA657d7D9543b91aA1903b184611c521013e03467	50.00 ETH	1	1
0x1E2d1b9065F739d183521Efc5d0e9Cb812a7dF95	100.00 ETH	0	2
0x6c51A9E01A65c30234165cE1a29cBB32f54bF228	100.00 ETH	0	3
0xf9B9dEac32D7309C75fe4ECc587370CF253bBbb7	100.00 ETH	0	4
0x0eEC85d09eb30A9196B1A6BdBb4292484b34C173	100.00 ETH	0	5
0x1f0bb5C04182527A3AC3a0a037186FFaA0dfdF28	100.00 ETH	0	6

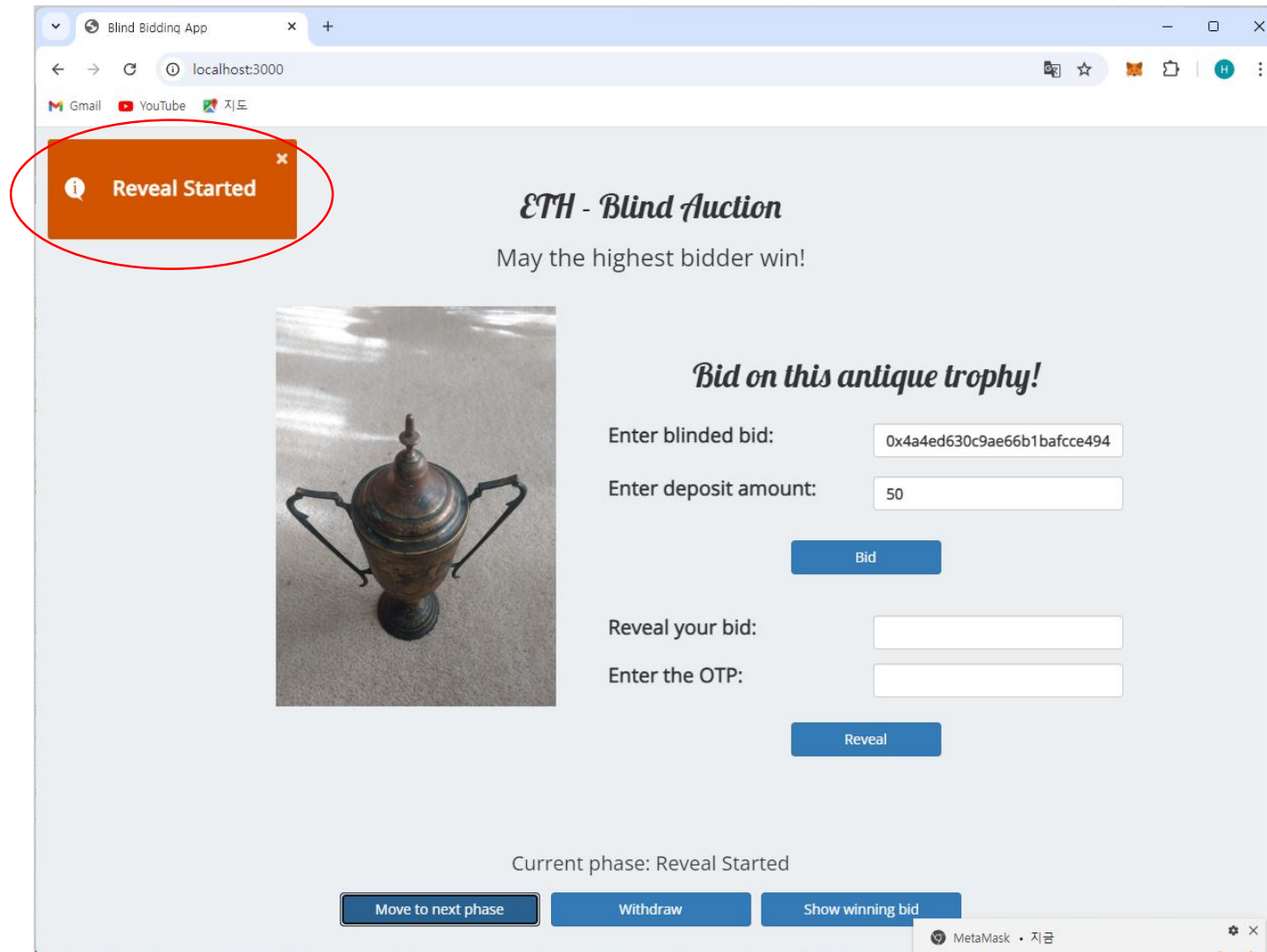
■ Account4 Bid 후 가나쉬 상태



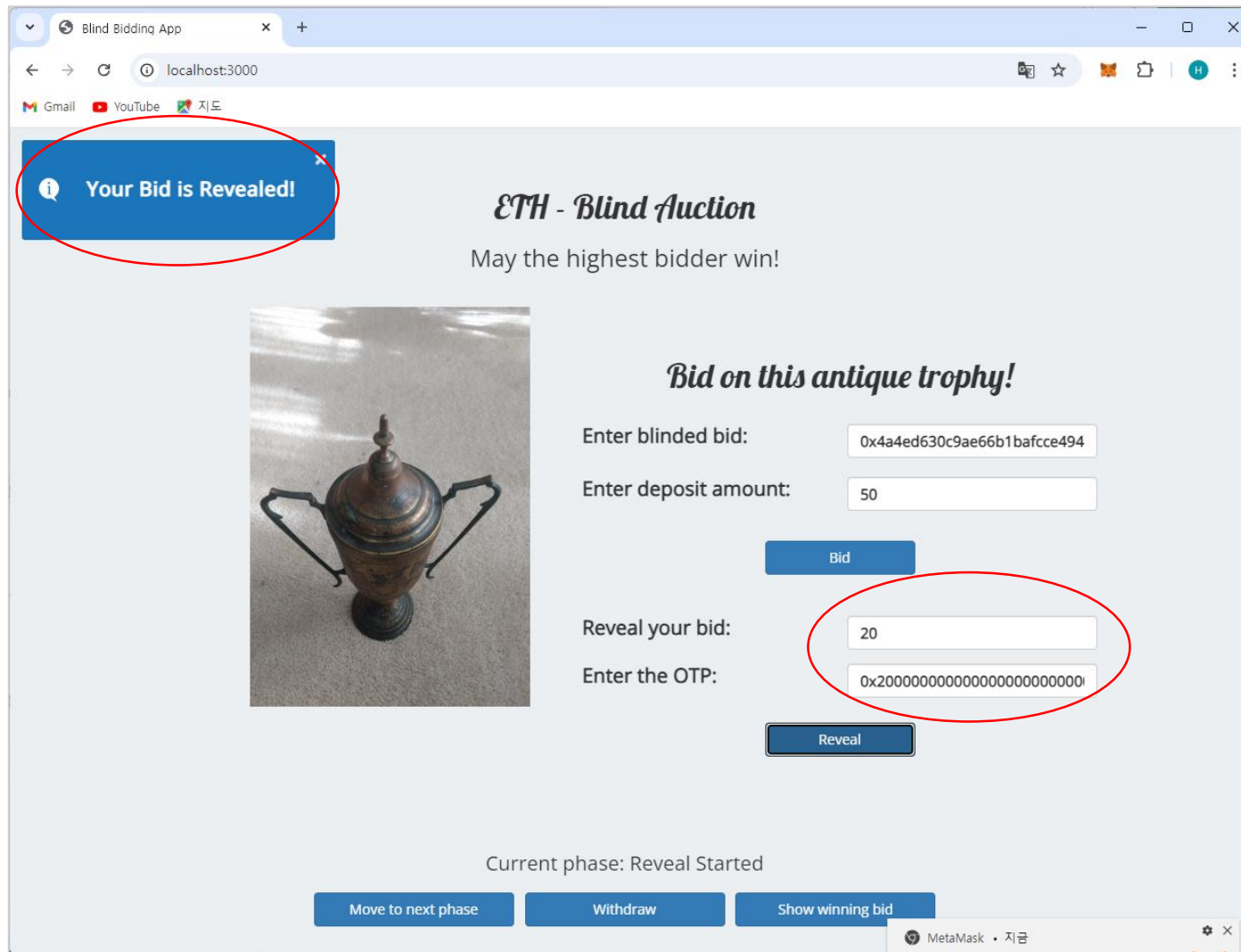
The screenshot shows the Ganache application window. The top navigation bar includes icons for ACCOUNTS, BLOCKS, TRANSACTIONS, CONTRACTS, EVENTS, and LOGS. Below this, a status bar displays various network parameters. The main area shows the account list with a mnemonic and HD path. A red circle highlights the balance of the selected account (Account 4).

ACCOUNT	ADDRESS	BALANCE	TX COUNT	INDEX
ACCOUNT 1	0xD64c79D9373C539635b3C174206b110adf6E02CE	99.99 ETH	5	0
ACCOUNT 2	0xA657d7D9543b91aA1903b184611c521013e03467	50.00 ETH	1	1
ACCOUNT 3	0x1E2d1b9065F739d183521Efc5d0e9Cb812a7dF95	50.00 ETH	1	2
ACCOUNT 4	0x6c51A9E01A65c30234165cE1a29cBB32f54bF228	100.00 ETH	0	3
ACCOUNT 5	0xf9B9dEac32D7309C75fe4ECc587370CF253bBbb7	100.00 ETH	0	4
ACCOUNT 6	0x0eEC85d09eb30A9196B1A6BdBb4292484b34C173	100.00 ETH	0	5
ACCOUNT 7	0x1f0bb5C04182527A3AC3a0a037186FFaA0dfdF28	100.00 ETH	0	6

- Account2가 [Move to next phase] 버튼 클릭하여 Reveal 단계로 변경



■ Account371 Reveal



Account3 Reveal 후 가나쉬 상태

Ganache

ACCOUNTS

BLOCKS

TRANSACTIONS

CONTRACTS

EVENTS

LOGS

SEARCH FOR BLOCK NUMBERS OR TX HASHES

CURRENT BLOCK
9

GAS PRICE
20000000000

GAS LIMIT
6721975

HARDFORK
MERGE

NETWORK ID
5777

RPC SERVER
HTTP://127.0.0.1:7545

MINING STATUS
AUTOMINING

WORKSPACE
QUICKSTART

SAVE

SWITCH

MNEMONIC ?

dash rabbit keep mimic denial sibling game erosion animal produce scorpion misery

HD PATH

m44'60'0'0account_index

ADDRESS

0xD64c79D9373C539635b3C174206b110adf6E02CE

BALANCE

99.99 ETH

TX COUNT

6

INDEX

0

ADDRESS

0xA657d7D9543b91aA1903b184611c521013e03467

BALANCE

80.00 ETH

TX COUNT

2

INDEX

1

ADDRESS

0x1E2d1b9065F739d183521Efc5d0e9Cb812a7dF95

BALANCE

50.00 ETH

TX COUNT

1

INDEX

2

ADDRESS

0x6c51A9E01A65c30234165cE1a29cBB32f54bF228

BALANCE

100.00 ETH

TX COUNT

0

INDEX

3

ADDRESS

0xf9B9dEac32D7309C75fe4ECc587370CF253bBbb7

BALANCE

100.00 ETH

TX COUNT

0

INDEX

4

ADDRESS

0x0eEC85d09eb30A9196B1A6BdBb4292484b34C173

BALANCE

100.00 ETH

TX COUNT

0

INDEX

5

ADDRESS

0x1f0bb5C04182527A3AC3a0a037186FFaA0dfdF28

BALANCE

100.00 ETH

TX COUNT

0

INDEX

6

Account4가 Reveal


Blind Bidding App

localhost:3000

Gmail YouTube 지도

ETH - Blind Auction

May the highest bidder win!



Bid on this antique trophy!

Enter blinded bid:

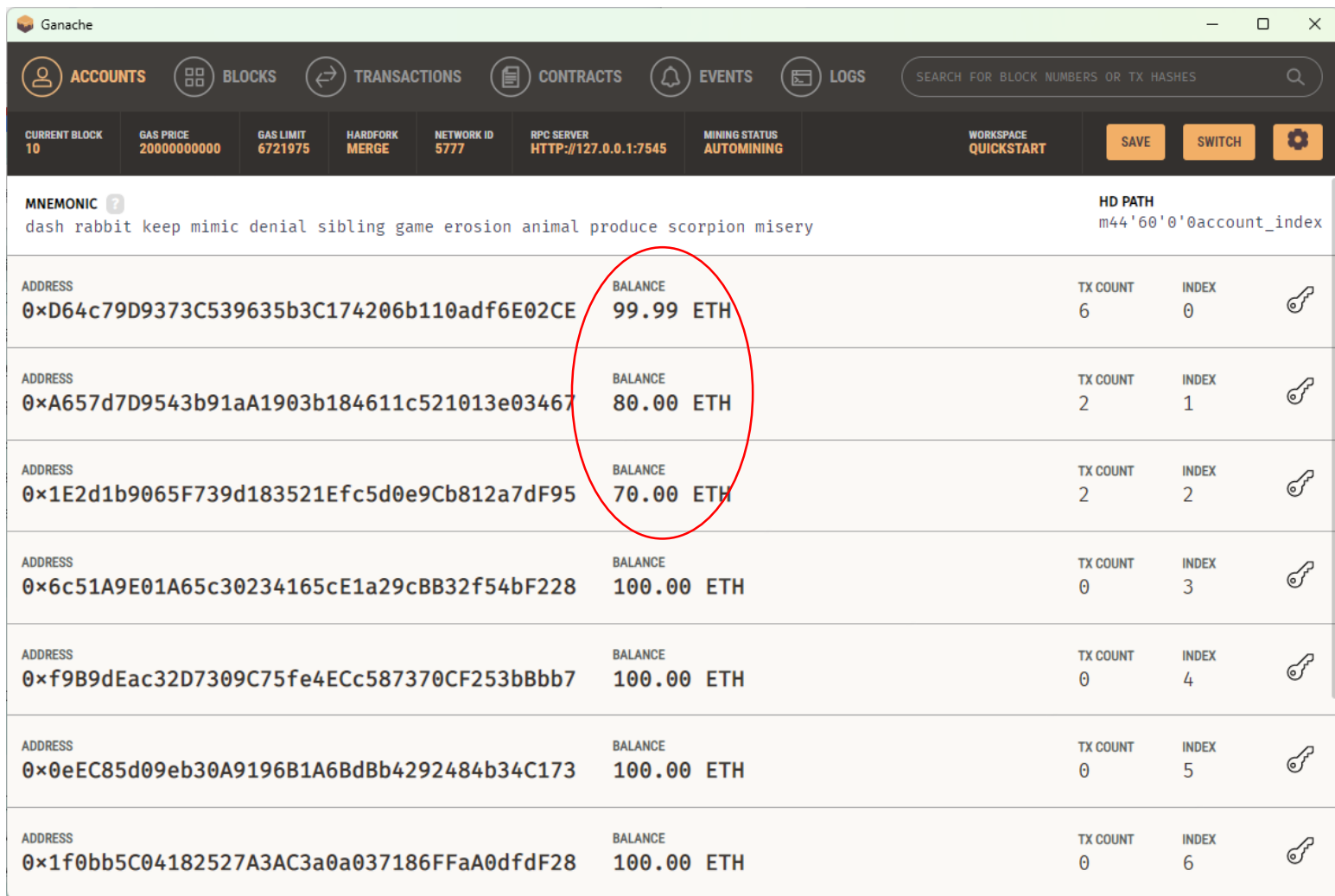
Enter deposit amount:

Reveal your bid:

Enter the OTP:

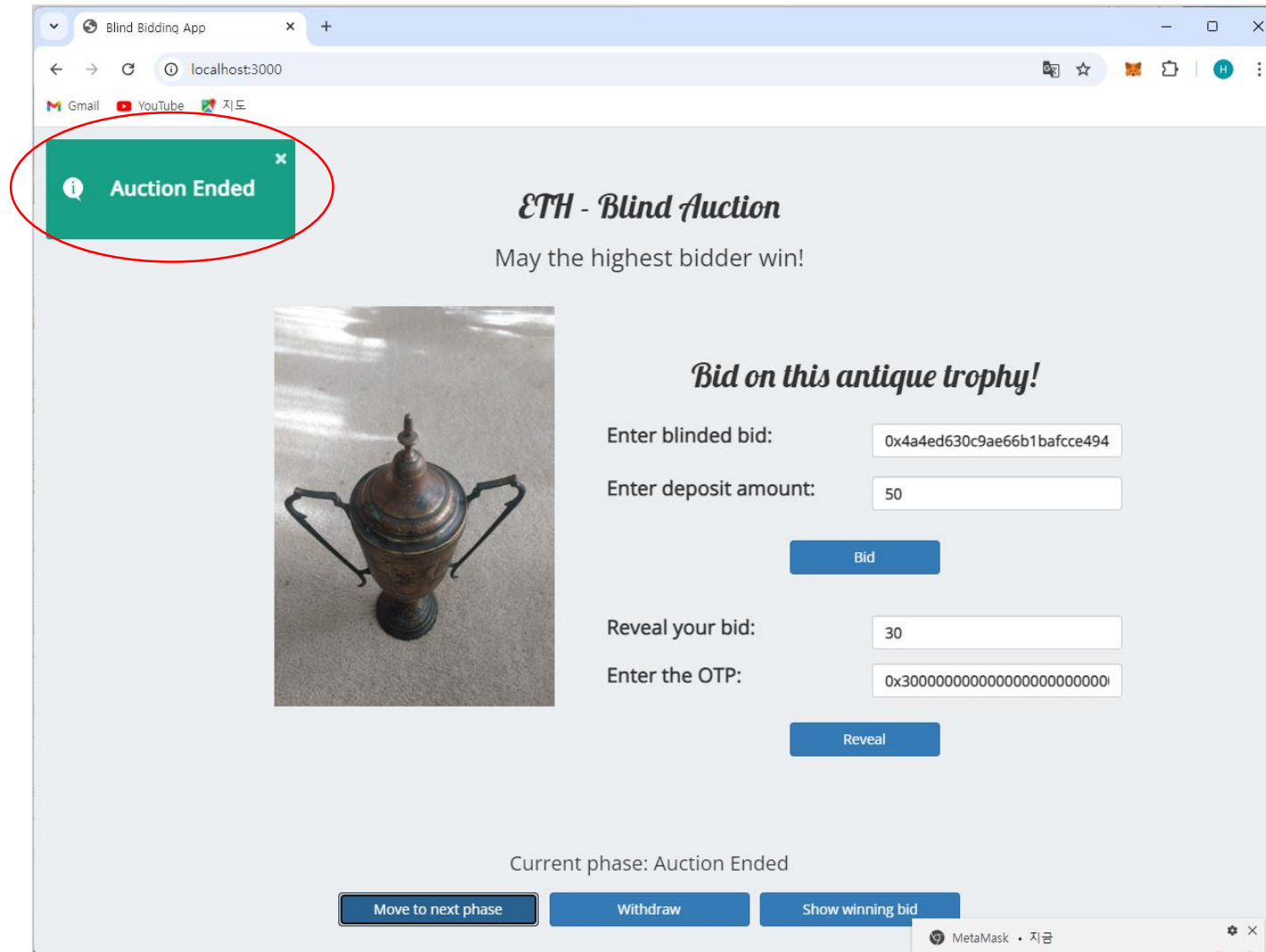
Current phase: Reveal Started

■ Account4 Reveal 후 가나쉬 상태

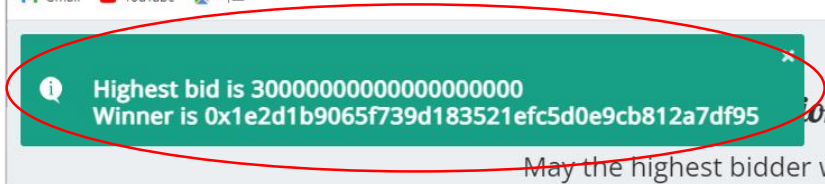


Ganache					
ACCOUNTS BLOCKS TRANSACTIONS CONTRACTS EVENTS LOGS					
SEARCH FOR BLOCK NUMBERS OR TX HASHES					
CURRENT BLOCK	GAS PRICE	GAS LIMIT	HARDFORK	NETWORK ID	RPC SERVER
10	20000000000	6721975	MERGE	5777	HTTP://127.0.0.1:7545
MINING STATUS					WORKSPACE
AUTOMINING					QUICKSTART
SAVE					SWITCH
?					
MNEMONIC					HD PATH
dash rabbit keep mimic denial sibling game erosion animal produce scorpion misery					m44'60'0'0account_index
ADDRESS	BALANCE	TX COUNT	INDEX		
0xD64c79D9373C539635b3C174206b110adf6E02CE	99.99 ETH	6	0		
0xA657d7D9543b91aA1903b184611c521013e03467	80.00 ETH	2	1		
0x1E2d1b9065F739d183521Efc5d0e9Cb812a7dF95	70.00 ETH	2	2		
0x6c51A9E01A65c30234165cE1a29cBB32f54bF228	100.00 ETH	0	3		
0xf9B9dEac32D7309C75fe4ECc587370CF253bBbb7	100.00 ETH	0	4		
0x0eEC85d09eb30A9196B1A6BdBb4292484b34C173	100.00 ETH	0	5		
0x1f0bb5C04182527A3AC3a0a037186FFaA0dfdF28	100.00 ETH	0	6		

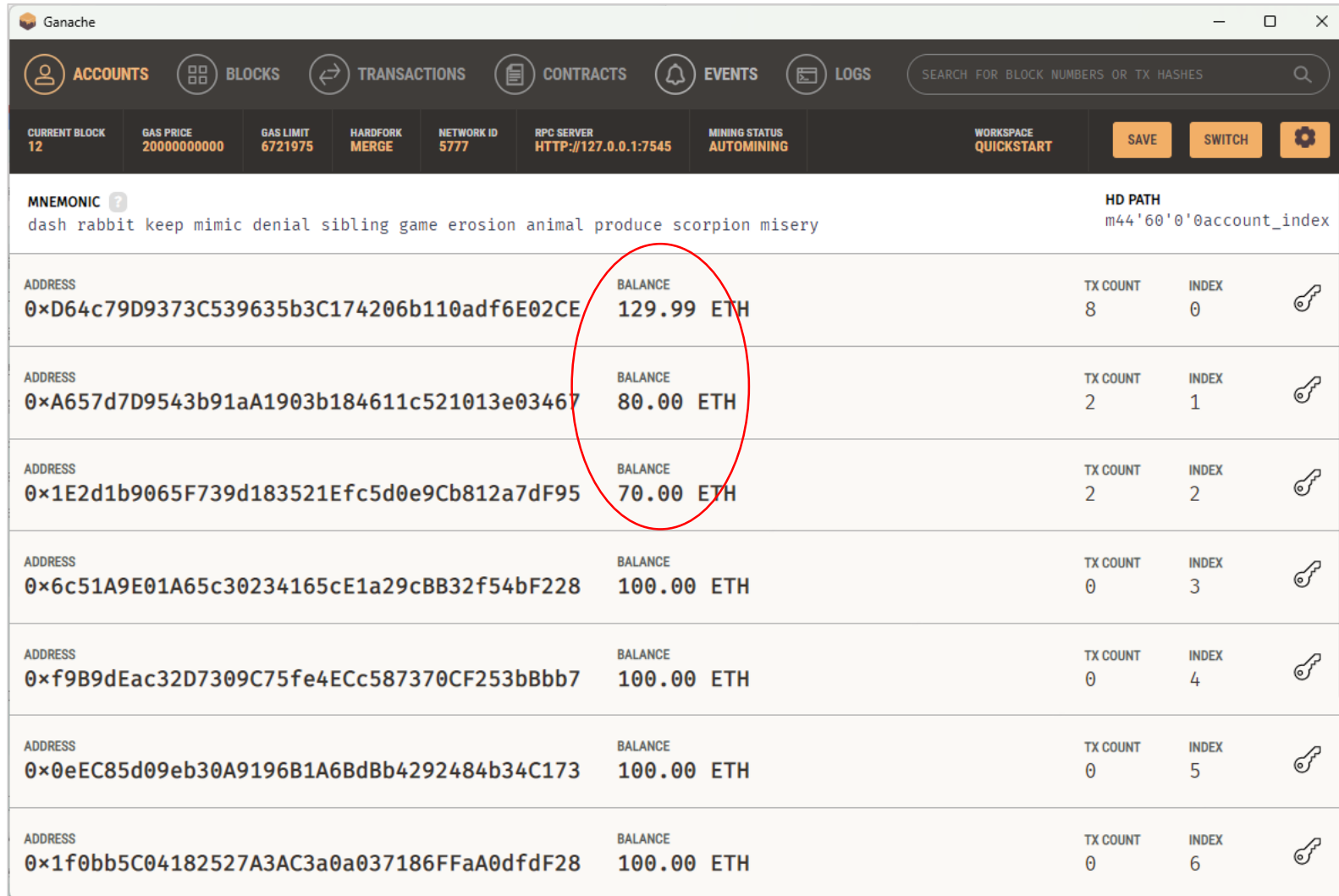
- Account2가 [Move to next phase] 클릭하여 경매 종료 단계로 변경



- ## 낙찰금 전송



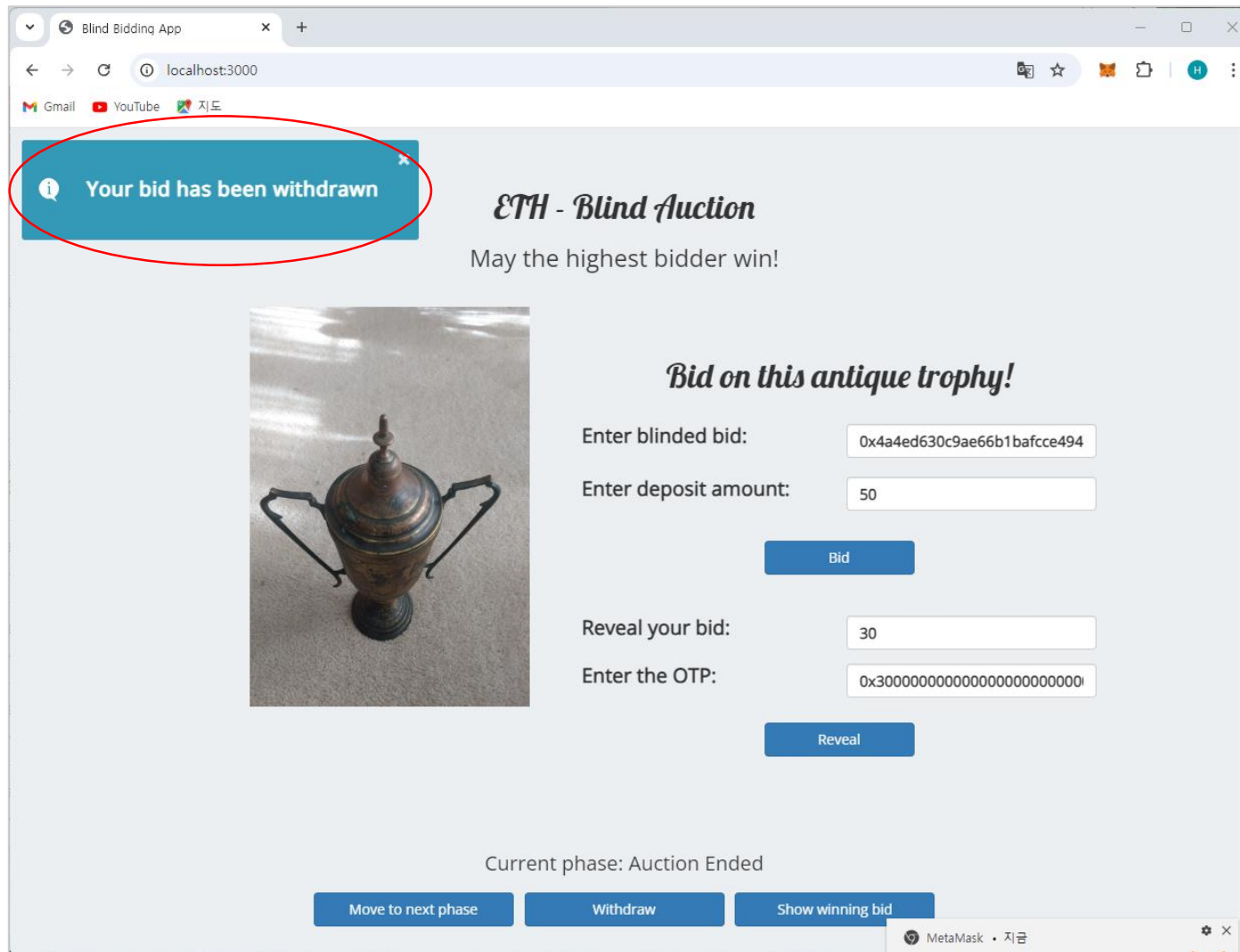
■ [Show winning bid] 후 가나쉬 상태



The screenshot shows the Ganache application window. The top navigation bar includes icons for ACCOUNTS, BLOCKS, TRANSACTIONS, CONTRACTS, EVENTS, and LOGS. Below this is a status bar with various network parameters. The main area displays the account list with a mnemonic and HD path. A red circle highlights the balance of the second account, 80.00 ETH.

ADDRESS	BALANCE	TX COUNT	INDEX
0xD64c79D9373C539635b3C174206b110adf6E02CE	129.99 ETH	8	0
0xA657d7D9543b91aA1903b184611c521013e03467	80.00 ETH	2	1
0x1E2d1b9065F739d183521Efc5d0e9Cb812a7dF95	70.00 ETH	2	2
0x6c51A9E01A65c30234165cE1a29cBB32f54bF228	100.00 ETH	0	3
0xf9B9dEac32D7309C75fe4ECc587370CF253bBbb7	100.00 ETH	0	4
0x0eEC85d09eb30A9196B1A6BdBb4292484b34C173	100.00 ETH	0	5
0x1f0bb5C04182527A3AC3a0a037186FFaA0dfdF28	100.00 ETH	0	6

- Account3가 [Withdraw] 버튼 클릭하여 자신의 입찰금 반환



Account3 [Withdraw]후 가나쉬 상태

Ganache

ACCOUNTS BLOCKS TRANSACTIONS CONTRACTS EVENTS LOGS

SEARCH FOR BLOCK NUMBERS OR TX HASHES

CURRENT BLOCK 13 GAS PRICE 20000000000 GAS LIMIT 6721975 HARDFORK MERGE NETWORK ID 5777 RPC SERVER HTTP://127.0.0.1:7545 MINING STATUS AUTOMINING WORKSPACE QUICKSTART SAVE SWITCH

MNEMONIC ? dash rabbit keep mimic denial sibling game erosion animal produce scorpion misery HD PATH m44'60'0'0account_index

ADDRESS	BALANCE	TX COUNT	INDEX	
0xD64c79D9373C539635b3C174206b110adf6E02CE	129.99 ETH	8	0	
0xA657d7D9543b91aA1903b184611c521013e03467	100.00 ETH	3	1	
0x1E2d1b9065F739d183521Efc5d0e9Cb812a7dF95	70.00 ETH	2	2	
0x6c51A9E01A65c30234165cE1a29cBB32f54bF228	100.00 ETH	0	3	
0xf9B9dEac32D7309C75fe4ECc587370CF253bBbb7	100.00 ETH	0	4	
0x0eEC85d09eb30A9196B1A6BdBb4292484b34C173	100.00 ETH	0	5	
0x1f0bb5C04182527A3AC3a0a037186FFaA0dfdF28	100.00 ETH	0	6	

■ Bid 후 가나쉬 상태

- Account2: 100 ETH
- Account3: 50 ETH
- Account4: 50 ETH
- 컨트랙트: 100 ETH

■ Reveal 후 가나쉬 상태

- Account2: 100 ETH
- Account3: 80 ETH
- Account4: 70 ETH
- 컨트랙트: 50 ETH

■ 결과 확인 후 가나쉬 상태

- Account2: 130 ETH
- Account3: 80 ETH
- Account4: 70 ETH
- 컨트랙트: 20 ETH

■ Withdraw 후 가나쉬 상태

- Account2: 130 ETH
- Account3: 100 ETH
- Account4: 70 ETH
- 컨트랙트: 0 ETH

■ 종료 후, 메타마스크의 각 계정 상태

