# Introduction to Programming and Numerical Analysis

Exercise Class 7
Exercise 4

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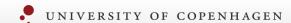
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# Today's Program

- 15:15 15:20: Introduction to Problem Set 2
- 15:20 15:50: Work on Problem Set 2
- 15:50 16:00: Quick Review of A1 and A2
- 16:00 16:15: Break
- 16:15 16:45: Work on Problem Set 2
- 16:45-17:00: Quick Review of A3 and A5



#### Introduction to Problem Set 1

### Today's Agenda

- Introduction to simulating pseudo-random numbers, a fundamental technique in numerical economics
  - Model uncertain outcomes effectively
  - Model variability in preferences, resources, and productivity in economic models

#### **Learning Outcomes**

- Be able to:
  - Draw random numbers from distributions
  - Use seeds and states to ensure reproducibility
  - Solve an exchange economy model with heterogenous preferences

## Tips for Problem Set 2, A1:

Output should be this table

```
(0, 0): x = 0.569

(0, 1): x = 0.077

(1, 0): x = 0.569

(1, 1): x = 0.077

(2, 0): x = 0.569

(2, 1): x = 0.077
```

## Tips for Problem Set 1, A5:

#### Steps

- Generate agents, their preferences, and endowments through random number simulation
- Define the demand and aggregate demand for good one
  - Remember, due to Cobb-Douglass preference  $x_1 = \alpha \frac{l}{n_1}$  and  $x_1 = (1 \alpha) \frac{l}{n_2}$
- 3. Define excess demand and aggregate excess demand for good one
  - Remember, due to no production  $s(x_1) = \sum_{i=0}^{N} e_1^{j}$
- Find the equilibrium by defining excess demand for good one as a function of price one and solve for the root

The solution is  $p_1 = 1.62056$  (remember Walras-Law)

# Break



# Questions & comments?