

M339D: January 23rd, 2026.

Notation. Assumptions. Conventions.

Assumptions. • There is a single prevailing interest rate.

- the same for borrowing & lending
- the same for everyone
- deterministic and constant

- There is an infinite line of credit.
- Money is continuously valued.

$$\text{e.g., } 100e^{0.02 \cdot 2} = 100e^{0.04}$$

Note: Borrowing & lending via savings accounts, loans, bonds, ..., are all RISKLESS INVESTMENTS.

RISKLESS ASSET: governed by a fixed, deterministic, continuously compounded, risk-free interest rate r

RISKY ASSET:

1/1	1/1	1/1
1/1	1/1	1/1

We assume that shares of stock are continuously valued,
e.g., $\frac{11}{17}$ share

or $e^{-0.03}$ shares

Return

dividends

stock appreciation

DISCRETE

CONTINUOUS

Dividends

YES

NO DIVIDENDS (This class!)