Financial Mathematics

Pricing/hedging in three subperiods

0057-1. Say risk-free factor $e^r = 1.005$.
Suppose we are tracking an asset, modeled
with uptick factor $e^u = 1.03$
and downtick factor $e^d = 0.93$.

Compute the risk-neutral expected value of an asset that pays

\$4	on	4 upticks and 0 downticks,
\$3	on	3 upticks and 1 downtick,
\$2	on	2 upticks and 2 downticks,
\$1	on	1 uptick and 3 downticks,
\$0	on	0 upticks and 4 downticks.