This document contains 1 questions.

1. [default,O28]Consider a stock traded in Europe, whose price (in €) at time $n = 0, 1$ is S_n, and suppose the exchange rate between £ and € (defined as the cost of one € in £) at time $n = 0, 1$ is E_n. Assume that the domestic (£) interest rate is $r_d = \frac{1}{9}$, the foreign (€) interest rate $r_f = \frac{1}{5}$, and E, S are as follows

$$S_0 := 10, \quad E_0 := 1,$$

ω	ω_1	ω_2	ω_3
$E_1(\omega)$	$\frac{5}{3}$	1	$\frac{1}{3}$
$S_1(\omega)$	$\frac{40}{3}$	$\frac{10}{9}$	$\frac{20}{3}$

   (a) Is this market-model arbitrage-free? *(Hint: to determine what is the market, consider what investments you can make, and measure their values in £)*
   A. No B. Yes

   (b) Is this market-model complete?
   A. No B. Yes

   (c) Consider the call option on S with strike $K = €11$. Is it replicable?
   A. No B. Yes

   (d) What is the set of arbitrage-free prices in domestic currency (£) of the above call option?
   A. an open interval B. a singleton C. $\emptyset$, i.e., there are no arbitrage-free prices

   (e) Suppose now that r_d was equal to 1/4, not to 1/9. Is the market arbitrage-free?
   A. No B. Yes

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