ou can preview this quiz, but if this were a real attempt, you would be blocked because: Is quiz is not currently available Itemation Problem 1 (consists of questions 1 and 2) Explain in your own words why a large autocorrelation of an asset's daily returns contradicts the weak form of the efficient market hypothesis. Explain in your own words why a large autocorrelation of an asset's daily returns contradicts the weak form of the efficient market hypothesis.		
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	uestion 2	
Explain briefly why the situation would also contradict the strong form of the efficient market hypothesis.	ot yet answered	
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■ Week 10 Sample Solution Jump to Late-summer final assessm Late	ot yet answered arked out of 00	contradict the strong form of the efficient market hypothesis.

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Problem 2 (co	onsists of questions 3 and 4)
Consider the A	$AR(1)$ stock price model, where the daily volatility is modelled using the $AR(1)$ process. I.e., the daily log-return $X_t = \log(S_{t+1}/S_t)$ are given as
$X_t = \mu + \sigma_t Z$	Z_t , with $Z_t \sim \mathcal{N}(0, 1)$ i.i.d.,
and $(\sigma_t)_{t\in\mathbb{Z}}$ fol	llows a stationary AR(1) process (independent of Z_t):
$\sigma_t = \alpha + \beta \sigma_{t-1}$	$_{-1}+varepsilon_{t}$
with $ \beta < 1$ a	and $arepsilon_t \sim \mathcal{N}(0,1)$ i.i.d.
Question 3	
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Question 4 Not yet answered Marked out of 7.00	
7.00	volatility cluster is and how the AR(1) model can reproduce them.
Explain what a	

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Problem 3 (c	onsists of questions 5 to 7)	
Question 5		
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You compare	the empirical data with a lognormal and an	AR(1) model, both fitted to the same data. You compute the value at risk at confidence level 99.9% and obtain the following value
VaR ^e _{99.9%} =		
VaR _{99.9%} (X _I		
VaR _{99.9%} (X		
Here VaR e	% denotes the empirical estimate of the val	ue at risk, $X_{ m LN}$ and $X_{ m AR}$ the stochastic return of the fitted lognormal and AR(1) model, respectively.
Which conclu	sion can we take from these values?	
○ a. Both	models underestimate daily losses	
O b. Both	models have a very good fit to the empirica	al data.
○ c. The l	ognormal model underestimates daily loss	es, while the AR(1) model shows a good fit to the empirical data
○ a. SF(2) ○ b. SF(2) ○ c. SF(3) ○ d. SF(2) ○ e. SF(2) ○ f. SF(2) ○ h. SF(2) Question 7 Question 7 Question 7 Anotyte answered Marked out of	collowing scaling properties hold for any rank $(X+1,b) = SF(X,b)$ (X,b+1) = SF(X,b) (X,b+1) = SF(X,b) + 1 (X,b/2) = SF(X,b) (X,2b) = 4SF(X,b) (X,2b) = SF(X,b) (X+1,b) = SF(X,b) + 1 (X,b/2) = 2SF(X,b)	andom variables X and $b>0$?
7.00		
Explain your o	choice in one paragraph.	
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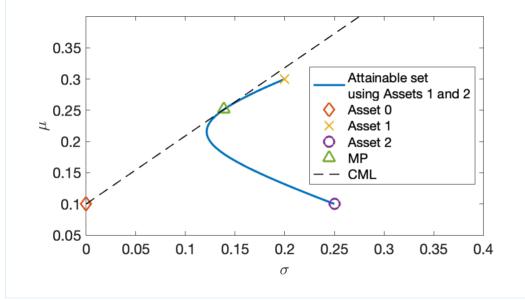
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Problem 4 (consists of questions 8 to 10)

Consider two risky assets (Asset 1 and 2) and one riskfree asset (Asset 0). Shortselling is only permitted for Asset 0. The following diagram shows the three assets, the attainable set using Assets 1 and 2, the market portfolio and the capital market line.

The values are given as $\mu_0=0.1, \mu_1=0.3, \sigma_1=0.2, \mu_2=0.1, \sigma_2=0.25$ with a correlation $\rho=-0.4$. The market portfolio is given as $\mu_{MP}=0.25, \sigma_{MP}=0.14$.



Question **8**Not yet answered Marked out of 5.00

Which of the following statements are correct?

(Select ALL that apply)

Select one or more:

- a. Even though Asset 2 is dominated by Asset 1 it contributes to efficient portfolios as it helps diversify risk.
- $\ \Box$ b. As the market portfolio is constructed from Asset 1 and Asset 2 only, it is independent of Asset 0.
- $\hfill\Box$ c. The capital market line is the efficient frontier for portfolios investing in all three assets
- 🗆 d. The efficient frontier for investments in Assets 1 and 2 is the part of the attainable set between the minimum variance portfolio and Asset 1.
- $\hfill \Box$ e. The ability to short sell assets 1 or 2 would change the capital market line.

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Question 9			
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	ortfolio $(\sigma_{ m P}, \mu_{ m P})$ consisting only the two risky assets ${ m I}$ and clearly justify your answer.	. Optimise your portfolio by maximising $\mu_{ m P} - \sigma_{ m P}^z$. State the we	ights, $\sigma_{ m P}$, and $\mu_{ m P}$. Remember that shortselling of Assets 1 and 2 is
not permitted	and clearty justify your answer.		
			/.
Not yet answered Marked out of 5.00			
Find the porti	folio P' consisting of the three assets with $\sigma_{P'}=0$.	21 and the largest possible return $\mu_{ ext{P}'}$. Note that shortselling is	only permitted for Asset 0. Submit return $\mu_{P'}$ and explain your
			//
4 m − t = : :			
■ Week 10 S	Sample Solution	Jump to	Late-summer final assessment (hidden) ▶

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	questions 11 to 15) e all assumptions of the CAPM with the risk-free interest rate $\mu_0=2\%$ are satisfied. We observe that the expected return of the market portfolio is and its standard deviation is $\sigma_{\mathrm{MP}}=\sqrt{\mathrm{Var}(R_{\mathrm{MP}})}=14\%$.
Question 11 Not yet answered Marked out of 3.00	
Given an efficient portfo	lio with $eta=2$. Compute its expected return μ and standard deviation σ .
First, enter the expected	return μ with two significant digits. For example $\mu=55\%$ should be submitted as 0.55 .
Answer:	
Question 12	
Not yet answered Marked out of 2.00	
Now enter the standard	deviation with two significant digits. For example $\sigma=55\%$ should be submitted as 0.55 .
Answer:	
Allswei.	
12	
Question 13 Not yet answered	
Marked out of 5.00	
How is the portfolio con	structed?
Question 14	
Not yet answered Marked out of 5.00	
	= 17.5%. Which range can the expected return μ obtain. If $\mu_{\rm max}$, such that $\mu \leq \mu_{\rm max}$ with three significant digits. E.g. for $\mu \leq 5.55\%$ submit 0.0555 .
Answer:	

Question 1. Not yet answ Marked out 7.00	wered		
Use the	CAPM formula		
	$_{0}=\beta(\mu_{\mathrm{MP}}-\mu_{0})$		
	formula for the variance $g^2\sigma_{\mathrm{MP}}^2 + \mathrm{Var}(arepsilon_{\mathrm{P}}),$		
where &	ϵ_P denotes the specific risk, to explain diversifiable and n	non-diversifiable risks and their rewards under the CAPM mode	ıl.
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9	Question 16 Not yet answered Marked out of		
	4.00		
	Problem 6 (consists of question 16 only)		
•••			oadings are based on a company's industry and geographic location. More
	precisely $eta_1=1$ for companies of the electrical eng main operations in the UK, otherwise $eta_3=0$.	gineering industry, otherwise $eta_1=0;$ $eta_2=1$ for companies	of the education industry, otherwise $ heta_2=0$; $ heta_3=1$ for companies with their
	Consider two companies, A and B, both have their n	main operations in the UK. Companies A is in the electrical $en_{ m f}$	gineering industry, while Company B in education. This means that their returns
	are given as		
-	$X_A = F_1 + F_3 + \varepsilon_A,$		
£	$X_B = F_2 + F_3 + \varepsilon_B$, with ε_A , ε_B pairwise independent and independen		
	with \mathcal{E}_A , \mathcal{E}_B pairwise independent and independen	it of F_1, F_2, F_3 .	
	Given $\mathbb{E}(F_1)=8\%$, $\mathbb{E}(F_2)=2.5\%$ and $\mathbb{E}(F_3)=3.5\%$	$3.0\%, \mathbb{E}(\varepsilon_A) = \mathbb{E}(\varepsilon_B) = 0$ as well as	
	$Var(F_1) = 0.15, Var(F_2) = 0.65, Var(F_3) = 0.65$	65, $Var(\varepsilon_A) = 0.10$, $Var(\varepsilon_B) = 0.03$.	
	Compute the covariance between the returns of cor	mpany A and B.	
	Submit the result with two significant digits.		
	Answer:		
	◀ Week 10 Sample Solution	Jump to	Late-summer final assessment (hidden) ▶

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Problem 7 (cons	ists of questions 17 to 19)
Question 17	
Not yet answered Marked out of 6.00	
	emetrised utility function $u_a(x)=1-e^{ax}$. For which values of $a\in\mathbb{R}$ is u_a a risk-averse utility function on \mathbb{R} . Explain your reasoning in one paragraph.
Marked out of 7.00	
	sk-seeking investor and a lottery with return $L \sim \mathcal{N}(\mu, 1)$ with an unknown expectation $\mu \in \mathbb{R}$. Determine the maximal range for μ , such that the expected utility is no
	sk-seeking investor and a lottery with return $L \sim \mathcal{N}(\mu, 1)$ with an unknown expectation $\mu \in \mathbb{R}$. Determine the maximal range for μ , such that the expected utility is no sk-seeking utility functions with $u(0) = 0$. Explain your reasoning in one paragraph.
negative for all ris Question 19 Not yet answered	
negative for all ris	
Question 19 Not yet answered Marked out of 5.00	
Question 19 Not yet answered Marked out of 5.00 In behavioural fin	sk-seeking utility functions with $u(0) = 0$. Explain your reasoning in one paragraph. Because of the S-shaped utility function are considered, which are neither risk-seeking, risk-averse or risk-neutral. To which of the following functions does this apply?
negative for all ris Question 19 Not yet answered Marked out of 5.00 In behavioural fin \bigcirc a. $u(x) = 0$	sk-seeking utility functions with $u(0) = 0$. Explain your reasoning in one paragraph. Sk-seeking utility functions with $u(0) = 0$. Explain your reasoning in one paragraph.
negative for all ris Question 19 Not yet answered Marked out of 5.00 In behavioural fin O a. $u(x) = 0$	isk-seeking utility functions with $u(0)=0$. Explain your reasoning in one paragraph. Indeed, often S-shaped utility function are considered, which are neither risk-seeking, risk-averse or risk-neutral. To which of the following functions does this apply? Indeed, often S-shaped utility function are considered, which are neither risk-seeking, risk-averse or risk-neutral. To which of the following functions does this apply? Indeed, often S-shaped utility function are considered, which are neither risk-seeking, risk-averse or risk-neutral. To which of the following functions does this apply? Indeed, often S-shaped utility function are considered, which are neither risk-seeking, risk-averse or risk-neutral. To which of the following functions does this apply?
Regative for all rise negative for all rise	sk-seeking utility functions with $u(0)=0$. Explain your reasoning in one paragraph. ance, often S-shaped utility function are considered, which are neither risk-seeking, risk-averse or risk-neutral. To which of the following functions does this apply? $\frac{x}{\sqrt{ x }}$, with $u(0)=0$
Regative for all rise negative for all rise	isk-seeking utility functions with $u(0)=0$. Explain your reasoning in one paragraph. Indeed, often S-shaped utility function are considered, which are neither risk-seeking, risk-averse or risk-neutral. To which of the following functions does this apply? Indeed, often S-shaped utility function are considered, which are neither risk-seeking, risk-averse or risk-neutral. To which of the following functions does this apply? Indeed, often S-shaped utility function are considered, which are neither risk-seeking, risk-averse or risk-neutral. To which of the following functions does this apply? Indeed, often S-shaped utility function are considered, which are neither risk-seeking, risk-averse or risk-neutral. To which of the following functions does this apply?
Regative for all rise negative for all rise	sk-seeking utility functions with $u(0)=0$. Explain your reasoning in one paragraph. ance, often S-shaped utility function are considered, which are neither risk-seeking, risk-averse or risk-neutral. To which of the following functions does this apply? $\frac{x}{\sqrt{ x }}$, with $u(0)=0$
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Regative for all rise negative for all rise	is seeking utility functions with $u(0) = 0$. Explain your reasoning in one paragraph. Hence, often S-shaped utility function are considered, which are neither risk-seeking, risk-averse or risk-neutral. To which of the following functions does this apply? The seeking utility functions with $u(0) = 0$ with $u(0) = $