

## Unit 14 - Week 11: Risk Management

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## Assignment 11

The due date for submitting this assignment has passed.  
As per our records you have not submitted this assignment.

Due on 2020-12-02, 23:59 IST.

1) Which of the following is true about  $F_X(x)$  :

1 point

- $F_X(x)$  is left-continuous and non-decreasing  
  $F_X(x)$  is right-continuous and non-decreasing  
  $F_X(x)$  is left-continuous and non-increasing  
  $F_X(x)$  is right-continuous and non-increasing

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 $F_X(x)$  is right-continuous and non-decreasing

2) Consider the following distribution:

1 point

$$X = \begin{cases} 20, & \text{with probability } 0.6 \\ 10, & \text{with probability } 0.2 \\ -10, & \text{with probability } 0.2 \end{cases}$$

Then  $q_{0.4}(X)$  equals:

- 10  
 0  
 +10  
 +20

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
+10

3) If  $X$  is a random variable, then which of the following is/are true :

1 point

- $q^\alpha(3X) = 9q^\alpha(X)$   
  $q^\alpha(5X) = 5q^\alpha(X)$   
  $q^{0.2}(-X) = -q_{0.8}(X)$   
  $q^{0.8}(-X) = q_{0.2}(X)$

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 $q^\alpha(5X) = 5q^\alpha(X)$   
 $q^{0.2}(-X) = -q_{0.8}(X)$

4) If an amount of 100 is invested in a bond for a year at a continuously compounded annual rate of 5%, with  $X = e^{-0.05}V(1) - 100$ , where  $V(1)$  is the value of the bond at the end of one year, then  $VaR^{0.05}(X)$  equals :

1 point

- 100  
 0  
 +50  
 +100

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
0

5) Consider the distribution of the random variable  $X$  as tabulated:

1 point

$X = x$	$P(X = x)$	$F_X(x)$
1	0.2	0.2
2	0.2	0.4
3	0.4	0.8
4	0.1	0.9
5	0.1	1.0

Then  $VaR^{0.7}(X)$  equals:

- 1  
 -2  
 -3  
 -4

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
-3

6) If  $S(1) = 100e^{z+3z}$ , with  $z \sim N(0, 1)$  and  $X = e^{-0.05}S(1) - 100$ , then which of the following holds true :

1 point

- $VaR^\alpha(X) = 100 \left(1 + e^{2.95+3N^{-1}(\alpha)}\right)$   
  $VaR^\alpha(X) = 100 \left(1 + e^{2.95-3N^{-1}(\alpha)}\right)$   
  $VaR^\alpha(X) = 100 \left(1 - e^{2.95+3N^{-1}(\alpha)}\right)$   
  $VaR^\alpha(X) = 100 \left(1 - e^{2.95-3N^{-1}(\alpha)}\right)$

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 $VaR^\alpha(X) = 100 \left(1 - e^{2.95+3N^{-1}(\alpha)}\right)$

7) State whether the following statement is TRUE or FALSE :  
 $AVaR$  does not satisfy the subadditivity property .:

1 point

- TRUE  
 FALSE

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
FALSE

8) Which of the following properties does not hold in case of  $VaR$  :

1 point

- $X \leq Y \implies VaR^\alpha(X) \geq VaR^\alpha(Y)$   
  $VaR^\alpha(X+m) = VaR^\alpha(X) - m$   
 For all  $\lambda \geq 0$ ,  $VaR^\alpha(\lambda X) = \lambda VaR^\alpha(X)$   
 For any  $X$  and  $Y$ ,  $VaR^\alpha(X+Y) \leq VaR^\alpha(X) + VaR^\alpha(Y)$

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
For any  $X$  and  $Y$ ,  $VaR^\alpha(X+Y) \leq VaR^\alpha(X) + VaR^\alpha(Y)$