



**Vendor:** PRMIA

**Exam Code:** 8002

**Exam Name:** Exam II: Mathematical Foundations of Risk  
Measurement

**Version:** DEMO

#### QUESTION 1

What is the simplest form of this expression:  $\log_2(165/2)$

- A. 10
- B. 32
- C.  $5/2 + \log_2(16)$
- D.  $\log_2(5/2) + \log_2(16)$

**Answer: A**

#### QUESTION 2

For each of the following functions, indicate whether its graph is concave or convex:

$$Y = 7x^2 + 3x + 9$$

$$Y = 6 \ln(3x)$$

$$Y = \exp(-4x)$$

- A. concave, concave, concave
- B. concave, convex, convex
- C. convex, concave, concave
- D. convex, convex, concave

**Answer: C**

#### QUESTION 3

You invest \$100 000 for 3 years at a continuously compounded rate of 3%. At the end of 3 years, you redeem the investment. Taxes of 22% are applied at the time of redemption. What is your approximate after-tax profit from the investment, rounded to \$10?

- A. \$9420
- B. \$7350
- C. \$7230
- D. \$7100

**Answer: B**

#### QUESTION 4

You intend to invest \$100 000 for five years. Four different interest payment options are available. Choose the interest option that yields the highest return over the five year period.

- A. a lump-sum payment of \$22 500 on maturity (in five years)
- B. an annually compounded rate of 4.15%
- C. a quarterly-compounded rate of 4.1%
- D. a continuously-compounded rate of 4%

**Answer: C**

#### QUESTION 5

What is the 40th term in the following series: 4, 14, 30, 52, ...?

- A. 240
- B. 4598
- C. 4840
- D. 4960

**Answer: C**

#### QUESTION 6

Let  $a$ ,  $b$  and  $c$  be real numbers. Which of the following statements is true?

- A. The commutativity of multiplication is defined by
- B. The existence of negatives is defined by
- C. The distributivity of multiplication is defined by
- D. The associativity of multiplication is defined by

**Answer: C**

#### QUESTION 7

Which of the following is not a sequence?

- A.  $,, , \dots, , , \dots$
- B.  $,, , , \dots$
- C.  $,, , , , \dots$
- D. 30

**Answer: D**

#### QUESTION 8

Which of the following statements is not correct?

- A. Every linear function is also a quadratic function.
- B. A function is defined by its domain together with its action.
- C. For finite and small domains, the action of a function may be specified by a list.
- D. A function is a rule that assigns to every value  $x$  at least one value of  $y$ .

**Answer: D**

#### QUESTION 9

Which of the following statements is true?

- A. Discrete and continuous compounding produce the same results if the discount rate is positive.
- B. Continuous compounding is the better method because it results in higher present values compared to discrete compounding.
- C. Continuous compounding can be thought as making the compounding period infinitesimally small.
- D. The constant plays an important role in the mathematical description of continuous compounding.

**Answer: C**

**QUESTION 10**

Let  $X$  be a random variable normally distributed with zero mean and let  $Y$ . Then the correlation between  $X$  and  $Y$  is:

- A. negative
- B. zero
- C. not defined
- D. positive

**Answer: B**

**QUESTION 11**

A typical leptokurtotic distribution can be described as a distribution that is relative to a normal distribution

- A. peaked and thin at the center and with heavy (fat) tails
- B. peaked and thin at the center and with thin tails
- C. flat and thick at the center and with heavy (fat) tails
- D. flat and thick at the center and with thin tails

**Answer: A**

**QUESTION 12**

Kurtosis( $X$ ) is defined as the fourth centred moment of  $X$ , divided by the square of the variance of

- A. Assuming  $X$  is a normally distributed variable, what is Kurtosis( $X$ )?
- B. 0
- C. 3
- D. 2
- E. 1

**Answer: B**

**QUESTION 13**

Over four consecutive years fund  $X$  returns 1%, 5%, -3%, 8%. What is the average growth rate of fund  $X$  over this period?

- A. 2.67%
- B. 2.75%
- C. 2.49%
- D. None of the above

**Answer: A**

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