


<b>Egypt-Japan University of Science and Technology</b> <b>Entrance Exam (Undergraduate)</b>		
Faculty of FIBH	Subject: Mathematics	 الجامعة المصرية اليابانية للعلوم والتكنولوجيا <b>E-JUST</b> Egypt-Japan University of Science and Technology エジプト日本科学技術大学
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Student Name:	Student ID:	

**Choose the correct answer**

**Question 1:** The price of a cinema ticket was \$40 last year. This year, the price is \$52. What is the percentage increase in the ticket price?

- A) 20%                      B) 25%                      C) 30%                      D) 32%

**Question 2:** What are the  $x$  and  $y$  intercepts of the equation:  $2x + 3y = 24$ ?

- A)  $(0, -8)$  and  $(12, 0)$     B)  $(12, 0)$  and  $(0, 8)$     C)  $(-8, 0)$  and  $(0, 12)$     D)  $(0, 12)$  and  $(0, 8)$

**Question 3:** Which one of the following equations matches the shown graph in Fig. Q. 3?

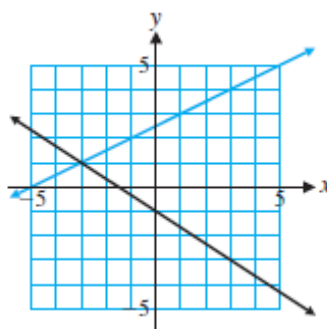


Fig. Q.3

- A)  $x + 2y = -5$  &  $2x - 3y = -2$     B)  $x - 2y = 5$  &  $3x - 2y = 3$     C)  $-x + 2y = 5$  &  $2x + 3y = -3$     D)  $x + 2y = -5$  &  $2x - 3y = 3$

**Question 4:** The expression  $1 + \log a + 4 \log b - 5 \log c$  simplifies to

- A)  $\log \frac{10ac^5}{b^4}$     B)  $\log \frac{4ab}{c^5}$     C)  $\log \frac{4ab}{5c}$     D)  $\log \frac{10ab^4}{c^5}$

**Question 5:** In the sequence 5, 26, 131,  $x$ , 3281..., what is the most likely value of  $x$ ?

- A) 565                      B) 656                      C) 736                      D) 856

**Question 6:** If  $4x + 2y = 24$  and  $7x - 3y = 29$ , then the value of  $x$  is

- A) 2                      B) 3                      C) 4                      D) 5

**Question 7:** If  $A = \begin{pmatrix} 0 & 1 \\ 3 & -1 \end{pmatrix}$ ,  $B = \begin{pmatrix} 1 & 2 \\ -1 & 0 \end{pmatrix}$ , then  $2A - B$  equals:

- A)  $\begin{pmatrix} 1 & 0 \\ -7 & -2 \end{pmatrix}$     B)  $\begin{pmatrix} -1 & 0 \\ -7 & 2 \end{pmatrix}$     C)  $\begin{pmatrix} -1 & 0 \\ 7 & -2 \end{pmatrix}$     D)  $\begin{pmatrix} 1 & 0 \\ 7 & -2 \end{pmatrix}$

**Question 8:** What is the midpoint of the segment joining the two points (2, 8) and (8, 2)?

- A) (5,5)                      B) (4, 6)                      C) (3, 7)                      D) (6, 4)

**Question 9:** If the velocity  $v(t)$  of a motorcycle is given by

$$v(t) = \begin{cases} 4t^2 & \text{when } 0 \leq t \leq 5 \\ 100 & \text{when } 5 < t < 100 \\ -5t + 600 & \text{when } 100 \leq t \leq 220 \end{cases}$$

where  $t$  is time in seconds and  $v$  is in cm/sec. Then  $v(75)$

- A) 22500                      B) 225                      C) 100                      D) 345

**Question 10:** Form the quadratic equation whose roots are 2 and  $-5$ .

- A)  $x^2 + 3x - 10 = 0$     B)  $x^2 - 3x - 10 = 0$     C)  $x^2 + 7x + 10 = 0$     D)  $x^2 - 7x + 10 = 0$

**Question 11:** In triangle ABC, side  $a = 5$ , side  $b = 7$ , and angle C is  $60^\circ$ . What is the length of side  $c$ ?

- A)  $\sqrt{39}$                       B)  $\sqrt{109}$                       C) 6                      D)  $\sqrt{74}$

**Question 12:** The ratio of the perimeters of two similar triangles is 3:4. If the area of the smaller triangle is  $45 \text{ cm}^2$ . What is the area of the larger triangle?

- A)  $60 \text{ cm}^2$                       B)  $80 \text{ cm}^2$                       C)  $100 \text{ cm}^2$                       D)  $120 \text{ cm}^2$

**Question 13:** In a geometric sequence, the 2nd term is 12 and the 5th term is 324. What is the common ratio?

- A) 2                      B) 3                      C) 4                      D) 6

**Question 14:** Find the magnitude of the vector  $\mathbf{v} = 6\mathbf{i} - 8\mathbf{j}$

- A) 2                      B) 8                      C) 10                      D) 14

**Question 15:** In how many ways can 5 books be arranged on a shelf?

- A) 24                      B) 60                      C) 120                      D) 720