


Egypt-Japan University of Science and Technology <i>Entrance Exam (Undergraduate)</i>		
Faculty of FIBH	Subject: Mathematics	 الجامعة المصرية اليابانية للعلوم والتكنولوجيا E-JUST 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 What is the missing number?

$$7 \begin{pmatrix} 1 & 3 \\ -4 & 5 \end{pmatrix} - \begin{pmatrix} 3 & 4 \\ -2 & 2 \end{pmatrix} = \begin{pmatrix} 4 & \\ -24 & 33 \end{pmatrix}$$

- A) -4 B) 21 C) 17 D) 28

Question 2 What is the next fraction in this sequence:

$$\frac{85}{13}, \frac{74}{13}, \frac{62}{13}, \frac{49}{13}, \dots$$

- A) $\frac{36}{13}$ B) $\frac{37}{13}$ C) $\frac{35}{13}$ D) $\frac{34}{13}$

Question 3: Nancy solves a total of 10 exercises each day. She plans to increase the number of exercises she solves each day by 5 until it reaches 30. Which equation can we use to determine x , the number of days that it will take Nancy to reach her goal?

- A) $10 + 5x = 30$ B) $15 + x = 30$ C) $10(5 + x) = 30$ D) $15x = 30$

Question 4: In the triangle ABC , assume that the measure of the angle $B = x$ degrees, the measure of the angle $C = x + 15$ degrees, and the measure of the angle $A =$ measure of angle $C + 15$ degrees. What is the measure of the angle C ?

- A) 35 B) 60 C) 55 D) 65

Question 5: What are the x and y intercepts of the equation: $12x - 4y - 12 = 0$?

- A) $(-1, 0)$ and $(0, 3)$ B) $(0, -1)$ and $(3, 0)$ C) $(1, 0)$ and $(0, -3)$ D) $(0, 1)$ and $(-3, 0)$

Question 6: The set of real values of x for which $2x^2 - 1 < 7$, is:

- A) $] - 1, 1[$ B) $] - 2, 2[$ C) $] - 3, 3[$ D) $] - 4, 4[$

Question 7: The expression $\log a - 3 \log b - \log c$ simplifies to:

- A) $\log \frac{ac}{b^3}$ B) $\log \frac{a}{3bc}$ C) $\log \frac{a}{b^3 - c}$ D) $\log \frac{a}{b^3 c}$

Question 8: If the positive integer x leaves a remainder of 1 when divided by 8, what will be the remainder when $x + 10$ is divided by 8?

- A) 0 B) 1 C) 2 D) 3

Question 9: What is the domain of the rational function $f(x) = \frac{x-1}{2x^2+5x}$?

- A) \mathbb{R} B) $\mathbb{R} - \left\{0, -\frac{5}{2}\right\}$ C) $\left[-\frac{5}{2}, 0\right]$ D) $\mathbb{R} - \left[-\frac{5}{2}, 0\right]$

Question 10: The value(s) of k for which the quadratic equation $x^2 + kx + 9 = 0$ has two equal real roots is ...

- A) 3 B) -3 C) ± 6 D) ± 9

Question 11: If f is an even function and $f(2) = 5$, the point $(-2, 4k - 3)$ lies on the curve of the function f , then $k =$

- A) -2 B) 2 C) $\frac{1}{2}$ D) 5

Question 12: The interval on which the quadratic function $f(x) = x^2 - 5x + 6$ is negative is ...

- A) $] -\infty, 2 [$ B) $] 3, \infty [$ C) $] 2, 3 [$ D) $] -\infty, 2 [\cup] 3, \infty [$

Question 13: What is the 15th term of the arithmetic sequence: 4, 9, 14, 19, ...?

- A) 74 B) 79 C) 84 D) 89

Question 14: In which quadrant does the terminal side of an angle θ lie if $\sin \theta < 0$ and $\tan \theta > 0$?

- A) First B) Second C) Third D) Fourth

Question 15: In how many ways can a committee of 3 people be chosen from a group of 8 people?

- A) 24 B) 56 C) 112 D) 336