


Egypt-Japan University of Science and Technology <i>Entrance Exam (Undergraduate)</i>	
Faculty of FIBH	Subject: Mathematics
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Choose the correct answer

Question 1 Ahmed bought a meal from a restaurant made up of raw ingredients (meat, vegetables, and spices) for \$50 and marked up the price by 30%. If the sales tax rate is 10%, how much will a customer pay for the novel?

- A) \$80 B) \$65 C) \$71.5 D) \$55

Question 2 If the sum of two numbers is 16 and their product is 63, then these two numbers are roots of which of the following equations?

- A) $x^2 + 9x - 7 = 0$ B) $x^2 - 9x + 7 = 0$ C) $x^2 + 16x - 63 = 0$ D) $x^2 - 16x + 63 = 0$

Question 3 What is the midpoint of the segment joining the two points $(-4, 0)$ and $(0, 4)$?

- A) $(1, -1)$ B) $(-1, 1)$ C) $(-2, 2)$ D) $(2, -2)$

Question 4 The intersection point between the two lines $3x - 2y - 3 = 0$ and $2x - 4y + 6 = 0$ is:

- A) $(3, 3)$ B) $(-3, 3)$ C) $(3, -3)$ D) $(-3, -3)$

Question 5 In the sequence 6, 24, 96, x , 1536, what is the most likely value of x ?

- A) 384 B) 114 C) 536 D) 1084

Question 6 In the triangle XYZ , assume that the measure of the angle $X = x$ degrees, the measure of angle $Y = x + 5$ degrees, and the measure of angle $Z = x + 10$ degrees. What is the measure of angle Z ?

- A) 50 B) 55 C) 60 D) 65

Question 7 If the area of a triangle is 30 and its base is 10, what is the length of the altitude to that base?

- A) 5 B) 6 C) 7 D) 8

Question 8 If $A = \begin{pmatrix} 1 & 0 \\ -1 & 7 \end{pmatrix}$, $B = \begin{pmatrix} 0 & 1 \\ 3 & -4 \end{pmatrix}$, then $A + 2B$ equals:

- A) $\begin{pmatrix} -1 & 2 \\ 5 & 1 \end{pmatrix}$ B) $\begin{pmatrix} 1 & -2 \\ 5 & -1 \end{pmatrix}$ C) $\begin{pmatrix} -1 & 2 \\ -5 & 1 \end{pmatrix}$ D) $\begin{pmatrix} 1 & 2 \\ 5 & -1 \end{pmatrix}$

Question 9 The expression $\frac{2 \log 3}{\log 9 + \log 2}$ is equivalent to

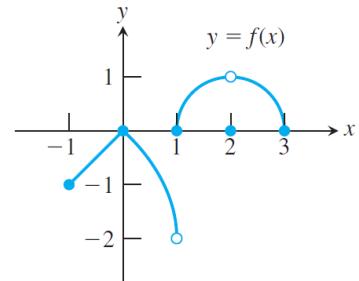
- A) $\frac{1}{2}$ B) $\log_{18} 3$ C) $\log_{18} 9$ D) $\log_2 9$

Question 10 If f is an odd function, then $\frac{3f(-4) - 5f(4)}{6f(-4)} = \dots\dots\dots$

- A) $-\frac{4}{3}$ B) $\frac{4}{3}$ C) $-\frac{1}{3}$ D) $\frac{1}{2}$

Question 11 In the opposite figure: $\lim_{x \rightarrow 1^+} f(x) = \dots\dots\dots$

- A) 1
 B) -1
 C) 0
 D) does not exist



Question 12: Simplify the trigonometric expression $\sin^2 \theta + \cos^2 \theta + \tan^2 \theta$.

- A) $\sec^2 \theta$ B) $\csc^2 \theta$ C) $\cot^2 \theta$ D) 2

Question 13: What is the equation of the straight line that passes through the points (1, 2) and (3, 6) ?

- A) $y = 2x$ B) $y = x + 1$ C) $y = 3x - 1$ D) $y = 2x + 1$

Question 14 An infinite geometric series has a sum of 12 and a first term of 8. What is the common ratio?

- A) 1/3 B) 1/2 C) 2/3 D) 3/4

Question 15 Find the unit vector in the direction of vector $\mathbf{w} = \langle 3, 4 \rangle$

- A) $\langle 0.3, 0.4 \rangle$ B) $\langle 3/5, 4/5 \rangle$ C) $\langle 3/7, 4/7 \rangle$ D) $\langle 1, 1 \rangle$