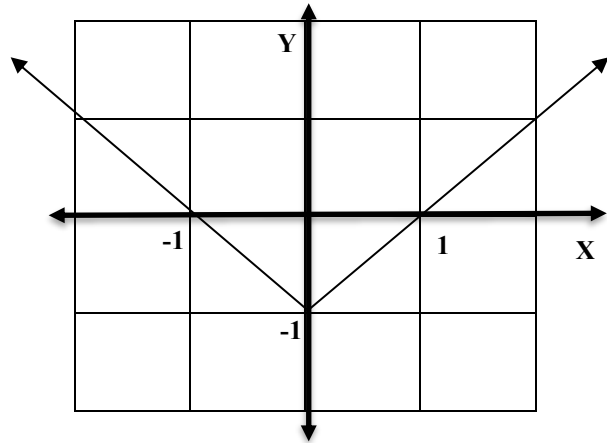


أولاً : الأسئلة الموضوعية (الاختيار من متعدد) "كل سؤال درجة واحدة"

(1)	If $\frac{6}{\omega+1} = a + b \omega^2$, then $a + b = \dots\dots\dots$						
(a)	3	(b)	6	(c)	12	(d)	5
(2)	The coefficient of the middle term in the expansion of $(1+x^2)^{20} (x^2+2+\frac{1}{x^2})^{10}$ is $\dots\dots\dots$						
(a)	$^{20}C_{10}$	(b)	$^{40}C_{10}$	(c)	$^{40}C_{20}$	(d)	$^{40}C_{21}$
(3)	If $\overrightarrow{B} = (3, -4, 4)$ and $\overrightarrow{C} = (1, 4, -7)$, then the direction cosine of the vector $\overrightarrow{B} + \overrightarrow{C} = \dots\dots\dots$						
(a)	$(\frac{4}{5}, 0, \frac{-3}{5})$	(b)	$(0, \frac{4}{5}, \frac{-3}{5})$	(c)	$(\frac{-4}{5}, 0, \frac{3}{5})$	(d)	$(\frac{4}{5}, 0, \frac{3}{5})$
(4)	If f is an odd function such that: $\int_{-5}^2 f(x)dx - \int_5^2 f(x)dx - \int_7^5 f(x)dx = \int_y^z f(x)dx$ Then $y + z$ may be equals $\dots\dots\dots$						
(a)	5	(b)	7	(c)	9	(d)	12
(5)	$\int \frac{\tan x}{\sec^2 x - 2} dx = \dots\dots\dots + C$						
(a)	$\ln \sec^2 x - 2 $	(b)	$\frac{1}{4} \ln \cos x $	(c)	$\frac{1}{4} \ln \cos 2x $	(d)	$\ln \tan x $
(6)	In the expansion of $(x + y)^{n-1}$, according to the descending power of x , if the seventh term has the greatest coefficient, then the number of terms of the expansion = $\dots\dots\dots$						
(a)	12	(b)	13	(c)	14	(d)	15
(7)	If the plane $2x - 3y + kz = 60$ cuts the coordinate axes at the points A , B and C and the volume of the pyramid $OABC$ is 1200 cubic units, then $k \in \dots\dots\dots$						
(a)	{6}	(b)	{5}	(c)	{5, - 5}	(d)	{6, - 6}
(8)	If the function $g: g(x) = \ln x$ is the inverse function of the function $y = g^{-1}(x)$, then $\frac{dy}{dx} = \dots\dots\dots$						
(a)	$\frac{1}{x}$	(b)	$\frac{-1}{x}$	(c)	e^x	(d)	e^{-x}

- (9) If the opposite figure represents the curve of the first derivative of the function f then the curve of the function f has an inflection point at $x \in \dots\dots$



- (a) $\{1\}$ (b) $\{-1\}$ (c) $\{1, -1\}$ (d) $\{0\}$

- (10) If $\int_0^k (x + k)^5 dx = 336k$, then $k = \dots\dots\dots$ (where $k > 0$)

- (a) 3 (b) 2 (c) 5 (d) 4

ثانياً : الأسئلة الموضوعية (الاختيار من متعدد) "كل سؤال درجتان"

- (11) If the measure of the angle between the straight line $\frac{1}{2}x = -y = \frac{1}{3}z$ and the plane $3x + 2y + kz = 9$ is 30° , then k may be $\dots\dots\dots$

- (a) 2 (b) 1 (c) 3 (d) 4

- (12) If the curve of the function $f: f(x) = (2x - a)^3$ has an inflection point at $x = 5$, then $f(4) = \dots\dots\dots$

- (a) - 8 (b) 8 (c) 10 (d) - 10

- (13) If the points A, B and C represent the complex numbers $\sqrt{3}$, $\sqrt{3}i$ and $\sqrt{3} + \sqrt{3}i$ on the argand diagram, then the surface area of the figure AOBC = $\dots\dots\dots$ square units.

- (a) $\sqrt{3}$ (b) $2\sqrt{3}$ (c) 3 (d) 1.5

- (14) If $\vec{B} = (k, 6, 8)$, the direction cosine of the vector $\vec{C}$ is $(m, \frac{3}{13}, \frac{4}{13})$, and $\vec{B}$ is parallel to $\vec{C}$ then $k = \dots\dots\dots$

- (a) ± 12 (b) 12 (c) 24 (d) ± 24

(15)	A point moves on the curve $y = 2\sqrt{x}$, if the rate of change of its distance from the point (0,7) equals 0.2 unit length /sec., then the rate of change of its x-coordinate at x=4 unit length is unit length /sec.						
(a)	- 0.2	(b)	0.2	(c)	0.4	(d)	- 0.4

(16)	If the volume of the solid generated by revolving the region bounded by the curve of the function $f: f(x) = \sqrt{\ln(x)}$, the x-axis and the two straight lines $x = 1, x = k$ is $\pi(k - 1)$ cubic unit, then $k = \dots\dots\dots$ (where $k > 1$)						
(a)	π	(b)	$2e$	(c)	e	(d)	e^2

(17)	If the vectors $\vec{A}$, $\vec{B}$ and $\vec{C}$ represent three edges intersect at one point in a parallelepiped such that $\vec{A} = (2, 0, 2)$, $\vec{B} = (2, 2, 0)$ and $\vec{C} = (0, 2, L)$ and the volume of the parallelepiped = 16 cubic units ,then L =						
(a)	6	(b)	2 or -6	(c)	4	(d)	- 2 or 4

(18)	If $y = x^2 + 2x - 8$, then the minimum value of the expression $xy - x^3$ is						
(a)	- 2	(b)	- 4	(c)	- 8	(d)	- 16

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(19)	If $x = \frac{-1 + \sqrt{3}i}{2}$,then find the value of $x^{100} + x^{101}$			
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(20)	Find $\int e^x \sin x \, dx$			
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Good luck