نموذج (٥) لامتحان شهادة إتمام الدراسة الثانوية العامة ٢٠٢٥ / ٢٠٢٦ م

المادة : الرياضيات البحتة باللغة الإنجليزية (الشعبة العلمية رياضيات) الزمن : ساعتان

أولا : الأسئلة الموضوعية (الاختيار من متعدد) -كل سؤال درجة

(1)	If $Z = -5\,sin\,\theta + 5i\,cos\,\theta$ and the modulus of Z = r and its principle amplitude is α, then $(r\,,\alpha)$=………..						
(a)	$(5,\theta)$	(b)	$(5,-\theta)$	(c)	$(5,\frac{\pi}{2}-\theta)$	(d)	$(5\,,\frac{\pi}{2}+\theta)$

(2)	The value of the term free of x in the expansion of $\left(x+\frac{1}{x}\right)^8+\left(x-\frac{1}{x}\right)^8$ equals …..						
(a)	140	(b)	100	(c)	60	(d)	20

(3)	If $\vec{A} = 2\vec{\imath} - \vec{\jmath} + 2\vec{k}$, then $\lVert\vec{A}\rVert$ =………..						
(a)	1	(b)	2	(c)	3	(d)	4

(4)	If $f(x)=e^x+\frac{1}{e^x}$, then $f'(0)$ =………..						
(a)	zero	(b)	1	(c)	2	(d)	e

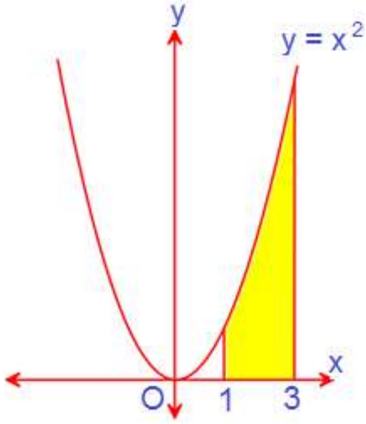
(5)	If $2x\,f(x)+x^2 f'(x)=4x^3+4x$ where $x \in R^*$ and $f(1)=7$, then $f(2)$ =………..						
(a)	4	(b)	6	(c)	7	(d)	9

(6)	The measure of the angle between the straight line: $\frac{x-3}{2}=\frac{z+1}{-2}$, $y=1$ and the plane: $x+2y-2z+5=0$ equals ……						
(a)	$\frac{\pi}{12}$	(b)	$\frac{\pi}{6}$	(c)	$\frac{\pi}{4}$	(d)	$\frac{\pi}{3}$

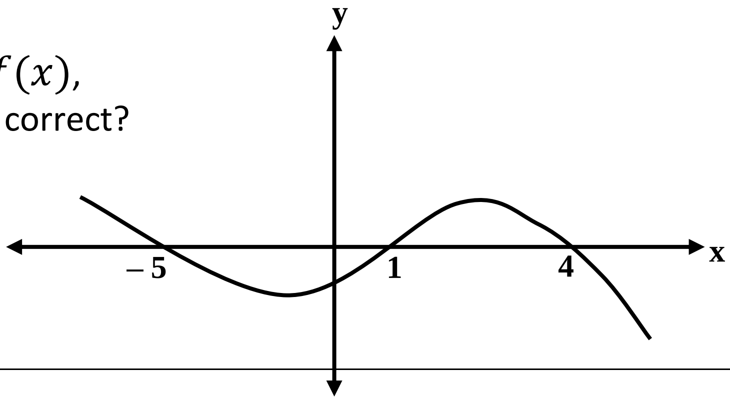
(7)	If x_1 , x_2 are the roots of the equation $x^2+7x+2=0$, then the middle term in the expansion of $(x_1+3x_2)^6$ equals …………						
(a)	3682	(b)	3750	(c)	3864	(d)	4320

(8)	If the slope of the tangent to a curve is given by the relation $\frac{dy}{dx}=\frac{1}{x}$ and the curve passes through the point $(e\ ,3)$, then $f(e^2)=$................						
(a)	3	(b)	4	(c)	5	(d)	6

(9)	In the opposite figure: The volume of the solid generated by revolving the shaded region a complete revolution about x – axis equals						
(a)	$\frac{241\pi}{3}$	(b)	$\frac{242\pi}{5}$	(c)	$\frac{243\pi}{5}$	(d)	$\frac{244\pi}{3}$



(10)	The opposite figure represents the First derivative of the function $y=f(x)$, Which of the following statements is correct?
(a)	$y=f(x)$has local minimum value at x = - 5
(b)	$y=f(x)$has local minimum value at x = 4
(c)	$y=f(x)$has local maximum value at x = 1
(d)	$y=f(x)$is increasing in the interval $]-\infty\ ,-5[$

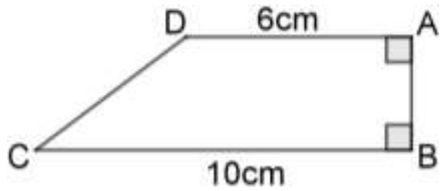


ثانيا : الأسئلة الموضوعية (الاختيار من متعدد) "كل سؤال درجتان"

(11)	If the straight line $L_1:\vec{r}=(2\ ,-1\ ,4)+t(m,-3,\ 2)$is perpendicular to the straight line $L_2:\frac{x-1}{2}=\frac{y+1}{4}=\frac{1-z}{1}$, then m = ...						
(a)	7	(b)	6	(c)	5	(d)	4

(12)	If the function $y = f(x)$ is continuous on [1 , 3] and $\int_{1}^{3} (f(x)+1)\,dx = -5$, then $\int_{1}^{3} (f(x)+2)\,dx =$ ……………

(a)	5	(b)	3	(c)	− 3	(d)	1

(13)	from the opposite figure : $\overrightarrow{DC} \bullet \overrightarrow{CB} =$ ………… 

(a)	60	(b)	40	(c)	− 40	(d)	− 60

(14)	The equation of the plane which passes through the point $(3\ ,-2\ ,1)$ and the straight line $\frac{x-1}{2} = \frac{y+1}{3} = \frac{z-5}{4}$ is perpendicular to it is ………..

(a)	$2x + 3y + 4z - 4 = 0$	(b)	$2x + 3y + 4z + 4 = 0$
(c)	$2x + 3y + 4z - 16 = 0$	(d)	$2x + 3y + 4z + 16 = 0$

(15)	If the figure (1) represents the function $y = f(x)$ and Figure (2) represents the function $h(x)$ such that $h(x) = (r \circ f)(x)$, then $r'(4) =$ ………..

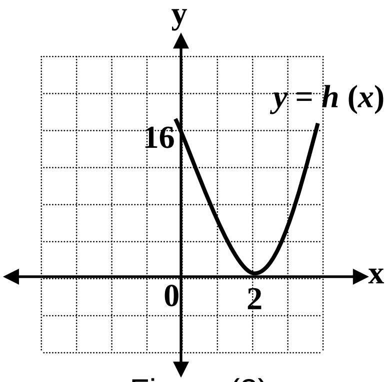


Figure (2)

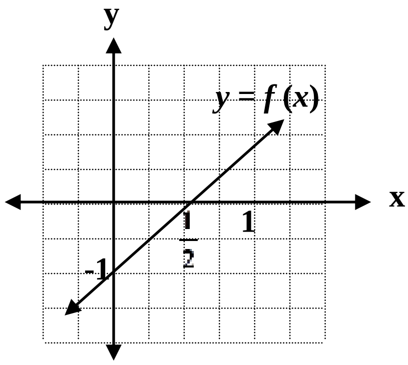


Figure (1)

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

(16)	The function $f(x) = x^3 - 3x + 5$ is decreasing in the interval ………

(a)	$]-\infty, -1[$	(b)	$]1, \infty[$	(c)	$]-1, 1[$	(d)	R

(17)	If $m - 2n = 7$ and $(x^3 + y^2)^7 = \ldots\ldots\ldots\ldots\ldots + kx^m y^n + \ldots\ldots\ldots\ldots$, then $k + n + m = \ldots\ldots\ldots$

(a)	56	(b)	48	(c)	45	(d)	40

(18)	The function $f(x) = x e^{x(1-x)}$ is increasing in the interval ………

(a)	$]-1, \frac{1}{2}[$	(b)	$]\frac{-1}{2}, 1[$	(c)	$]1, \infty[$	(d)	$]-\infty, -1[$

ثالثا: الأسئلة المقالية "كل سؤال درجتان"

(19)	If $Z = 1 + i + i^2 + \ldots\ldots\ldots\ldots + i^{25}$ Find the trigonometric form and the exponential form of the complex number Z .

(20)	In the opposite figure: If OB = 6 cm , find the length of $\overline{OC}$ which makes the surface area of Δ ABC as maximum as possible .