**نموذج ( ١٠ ) لامتحان شهادة إتمام الدراسة الثانوية العامة ٢٠٢٥ / ٢٠٢٦ م**
**المادة : الرياضيات البحتة باللغة الإنجليزية (الشعبة العلمية رياضيات) الزمن : ساعتان**

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

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|---|---|---|---|---|---|---|---|
| (1) | The number of terms of the expansion of $(x^2+1)\left(x+\frac{1}{x}\right)^{11}$ equals ..... | | | | | | |
| (a) | 11 | (b) | 22 | (c) | 12 | (d) | 13 |

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|---|---|---|---|---|---|---|---|
| (2) | If ABCD is a parallelogram in which $\overrightarrow{AB} \times \overrightarrow{AD} = (6, 6, -10)$, then $\left\|\overrightarrow{AC} \times \overrightarrow{BD}\right\|$ = ..... | | | | | | |
| (a) | $\sqrt{43}$ | (b) | $2\sqrt{43}$ | (c) | $4\sqrt{43}$ | (d) | $4\sqrt{34}$ |

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|---|---|---|---|---|---|---|---|
| (3) | If $y = \ln(1+ex)$, then $\frac{dy}{dx}$ = ..... | | | | | | |
| (a) | $e^{y}$ | (b) | $e^{-y}$ | (c) | $e^{1-y}$ | (d) | $e^{y-1}$ |

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|---|---|---|---|---|---|---|---|
| (4) | $\int x \cos x \, dx =$ .....+ c | | | | | | |
| (a) | $x \sin x - \cos x$ | (b) | $x \sin x + \cos x$ | (c) | $x \cos x + \sin x$ | (d) | $\sin x - x \cos x$ |

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|---|---|---|---|---|---|---|---|
| (5) | If $\omega$ is one of cubic roots of unity, $i^2 = -1$ and $\|-3k\omega\| = \|12i\|$, then $k$ = ..... | | | | | | |
| (a) | 4 | (b) | - 4 | (c) | $\pm 4$ | (d) | $\pm 9$ |

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| (6) | In the expansion of $\left(x^3 + \frac{1}{x^2}\right)^{10}$ according to the descending powers of $x$, the term free of $x$ = the coefficient of ..... | | | | | | |
| (a) | $x^5$ | (b) | $x^{10}$ | (c) | $x^{15}$ | (d) | $x^{20}$ |

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|---|---|---|---|---|---|---|---|
| (7) | If $y = \frac{z+1}{z-1}$, $x = \frac{z-1}{z+1}$, then $\frac{d^3y}{dx^3}$ =..... at $z = 0$ | | | | | | |
| (a) | 2 | (b) | -2 | (c) | -6 | (d) | 6 |

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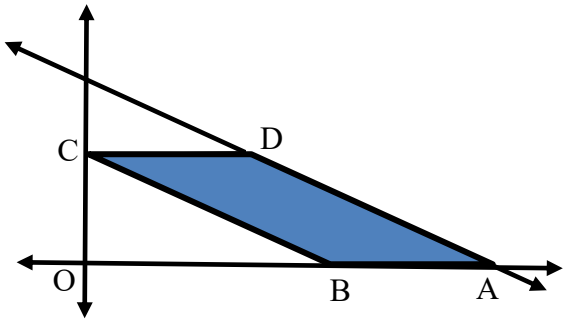
| (8) | In the opposite figure:<br>ABCD is a parallelogram and the coordinates of D $(x, 8 - 2x)$, then the greatest area of the parallelogram equals .... square unit.<br>  <br> | | | | | | |
| (a) | 32 | (b) | 16 | (c) | 8 | (d) | 4 |

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| (9) | If $f$ is an even and continues function in the interval [5$a$ + 3, 7] and $_{-5}\int^{0} f(x)\,dx$ = 8, $_{5}\int^{5-a} f(x)\,dx$ = 4, then $_{-5}\int^{5-a} f(x)\,dx$ = …… | | | | | | |
| (a) | 22 | (b) | 20 | (c) | 19 | (d) | 17 |

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| (10) | $\vec{A}$ , $\vec{B}$ are two vectors and the component of $\vec{A}$ in the direction of $\vec{B}$ equals 4, and the direction angles of $\vec{B}$ are (90° , 60° , 150° ), then the vector component of $\vec{A}$ in the direction of $\vec{B}$ is ……. | | | | | | |
| (a) | (1, 2, $\sqrt{3}$ ) | (b) | (0, 2, $-\sqrt{3}$ ) | (c) | (0, 1, $2\sqrt{3}$ ) | (d) | (0, 2, $-2\sqrt{3}$ ) |

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

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| (11) | The distance between the plane passing through the points (4, 0, 0), (0, 2, 0), (0, 0, 2) and the origin point = ……. length unit | | | | | | |
| (a) | 4 | (b) | $\frac{1}{3}$ | (c) | $\frac{4}{3}$ | (d) | $\frac{2}{3}$ |

| | | | | | | | |
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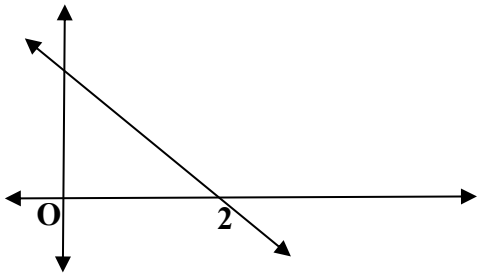
| (12) | In the opposite figure:<br>The curve represents f`` ($x$)<br>If f` (5) = f` (-1) = 0, then the curve of $y$ = f($x$)<br>has a local maximum value at $x$ = ……   | | | | | | |
| (a) | 5 | (b) | -1 | (c) | 0 | (d) | 2 |

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|---|---|---|---|---|---|---|---|
| (13) | If the straight line $\vec{r}$ = (-5, 0, -4) + $a\,\vec{e}$ intersects the plane 3$x$ + 2y + z + 5 = 0<br>at the point (-1, -2,2), then the measure of the angle between the straight line and the plane =…….. | | | | | | |
| (a) | 60° | (b) | 45° | (c) | 30° | (d) | 90° |

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|---|---|---|---|---|---|---|---|
| (14) | If $Z_1$, $Z_2$ are two square roots of a complex number and if $Z_1$ = 1 - $\sqrt{3}\,i$ , then $Z_2$ = ……. | | | | | | |
| (a) | $e^{\frac{2\pi i}{3}}$ | (b) | $2e^{\frac{2\pi}{3}}$ | (c) | $e^{\frac{-2\pi}{3}}$ | (d) | $2e^{\frac{2\pi i}{3}}$ |

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| (15) | If the curve of the function $y = x^3 - a x^2 - 9x + 5$ has a critical point at $x$ = -1,<br>then the curve has an inflection point at …… | | | | | | |
| (a) | (1, 6) | (b) | (-6, 1) | (c) | (1, -6) | (d) | (6, 1) |

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|---|---|---|---|---|---|---|---|
| (16) | The area of the region bounded by the curve $e^y = x$, the x-axis and the two lines $x = e$ , $x = e^2$ equals ……. square units. | | | | | | |
| (a) | $e$ | (b) | $2e$ | (c) | $e^2$ | (d) | $2e^2$ |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| (17) | In the expansion of $(\frac{1}{x} + x^2)^9$ according to the ascending powers of $x$ and If $T_{r-2} = 12T_{r-3}$ at $x = 2$, then r = …….. | | | | | | |
| (a) | 5 | (b) | 6 | (c) | 7 | (d) | 8 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| (18) | $\int \frac{tan^3x + \tan x}{tan^2x + 3}$ d $x$ = ……+c | | | | | | |
| (a) | ln ($\tan^2 x$ +3) | (b) | ln ($\sec^2 x$ +2) | (c) | $\frac{1}{2}$ ln $\lvert\tan x + 3\rvert$ | (d) | $\frac{1}{2}$ ln ($\sec^2 x$ +2) |

**ثالثاً: الأسئلة المقالية " كل سؤال درجتان"**

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| (19) | If 1, $\omega$ , $\omega^2$ are the cubic roots of the unity, $i^2 = -1$ and Z = $\omega + \frac{\omega}{i} + \omega^5 - \frac{i}{\omega}$, Then find the trigonometric form of the complex number Z |

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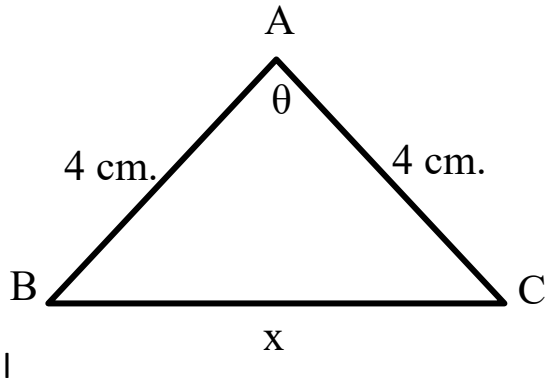
|---|---|
| (20) | In the opposite figure:<br>AB = AC = 4 cm.<br>m( $\angle$ A) = $\theta$<br>if the rate of increasing of the measure of angle $\theta$ = ( $\frac{1}{5}$ )$^{rad}$ / Sec.<br>Find the rate of increasing in the length of $\overline{BC}$ at the moment when the triangle is an equilateral<br>  <br> |

***Good luck***