NewBridge GRADUATE INSTITUTE

MATHEMATICS – P2

26th OCTOBER 2026

BREAKDOWN

Mathematics Paper 2

Monday 26th October 2026

09h00 – 3 hours

150 marks

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PAPER 2:	
DURATION:	**3 hours**
TOTAL MARKS:	**150**
This paper will consist of the following sections:	
Statistics	20±3 marks
Analytical Geometry	40±3 marks
Trigonometry	50±3 marks
Euclidean Geometry	40±3 marks

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Question 1 & 2 – Statistics (20)

* Cumulative Frequency & Ogive curve
* Scatter plots

Questions 3 & 4 – Analytical Geometry (40)

* Midpoint, length, gradient and angle of inclination
* Straight lines
* Circles & tangents

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Questions 5, 6 & 7 – Trigonometry (50)

* **Pythagorean questions**
* **General solution of equations**
* **Identities**
* **Graphs**
* **3-D question**
* **PROOFS**

Question 8, 9 & 10 – Euclidean Geometry (40)

* **Circle Geometry**
* **Midpoint Theorem**
* **Similar Triangles**
* **THEOREMS**

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INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. This question paper consists of 10 questions.
2. Answer ALL the questions.
3. Number the answers correctly according to the numbering system used in this question paper.
4. Clearly show ALL calculations, diagrams, graphs, etc. that you have used in determining your answers.
5. Answers only will NOT necessarily be awarded full marks.
6. You may use an approved scientific calculator (non-programmable and non-graphical), unless stated otherwise.
7. If necessary, round off answers to TWO decimal places, unless stated otherwise.
8. Diagrams are NOT necessarily drawn to scale.
9. An information sheet with formulae is included at the end of the question paper.
10. Write neatly and legibly.

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INFORMATION SHEET: MATHEMATICS

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$A = P(1+ni) \qquad A = P(1-ni) \qquad A = P(1-i)^n \qquad A = P(1+i)^n$$

$$T_n = a + (n-1)d \qquad S_n = \frac{n}{2}[2a + (n-1)d]$$

$$T_n = ar^{n-1} \qquad S_n = \frac{a(r^n - 1)}{r-1} \; ; \; r \neq 1 \qquad S_\infty = \frac{a}{1-r} \; ; \; -1 < r < 1$$

$$F = \frac{x[(1+i)^n - 1]}{i} \qquad P = \frac{x[1-(1+i)^{-n}]}{i}$$

$$f'(x) = \lim_{h \to 0} \frac{f(x+h) - f(x)}{h}$$

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \qquad M\left(\frac{x_1 + x_2}{2} ; \frac{y_1 + y_2}{2}\right)$$

$$y = mx + c \qquad y - y_1 = m(x - x_1) \qquad m = \frac{y_2 - y_1}{x_2 - x_1} \qquad m = \tan\theta$$

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$$(x-a)^2+(y-b)^2=r^2$$

In ΔABC: $\dfrac{a}{\sin A}=\dfrac{b}{\sin B}=\dfrac{c}{\sin C}$

$$a^2=b^2+c^2-2bc.\cos A$$

$$\text{area } \Delta ABC=\frac{1}{2}ab.\sin C$$

$$\sin(\alpha+\beta)=\sin\alpha\cos\beta+\cos\alpha\sin\beta$$

$$\sin(\alpha-\beta)=\sin\alpha\cos\beta-\cos\alpha\sin\beta$$

$$\cos(\alpha+\beta)=\cos\alpha\cos\beta-\sin\alpha\sin\beta$$

$$\cos(\alpha-\beta)=\cos\alpha\cos\beta+\sin\alpha\sin\beta$$

$$\cos 2\alpha=\begin{cases}\cos^2\alpha-\sin^2\alpha\\ 1-2\sin^2\alpha\\ 2\cos^2\alpha-1\end{cases}$$

$$\sin 2\alpha=2\sin\alpha.\sin\alpha$$

$$\bar{x}=\frac{\sum x}{n}$$

$$\sigma^2=\frac{\sum_{i=1}^{n}(x_i-\bar{x})^2}{n}$$

$$P(A)=\frac{n(A)}{n(S)}$$

P(A or B) = P(A) + P(B) – P(A and B)

$$\hat{y}=a+bx$$

$$b=\frac{\sum(x-\bar{x})(y-\bar{y})}{\sum(x-\bar{x})^2}$$

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NOTE:

- If a candidate answers a question TWICE, mark only the FIRST attempt.
- If a candidate has crossed out an attempt at an answer and not redone the question, mark the crossed-out version.
- Consistent accuracy applies in ALL aspects of the marking guidelines. Stop marking at the second calculation error.
- Assuming answers/values in order to solve a problem is NOT acceptable.

Tips to help not stress

1) Have enough stationery! (2 blue pens, a pencil, ruler and calculator)
2) USE the reading time!
3) Do not waste time on the hard questions. Leave space and move on.
4) Beware of CARELESS errors!
5) Check for realistic answers!
6) Copy formulae down correctly!

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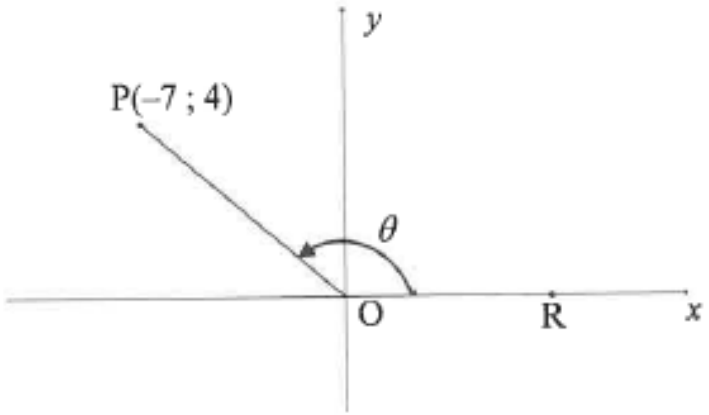
GEOMETRY • *MEETKUNDE*	
S	**A mark for a correct statement** *(A statement mark is independent of a reason)*
	'n Punt vir 'n korrekte bewering *('n Punt vir 'n bewering is onafhanklik van die rede)*
R	**A mark for the correct reason** *(A reason mark may only be awarded if the statement is correct)*
	'n Punt vir 'n korrekte rede *('n Punt word slegs vir die rede toegeken as die bewering korrek is)*
S/R	**Award a mark if statement AND reason are both correct**
	Ken 'n punt toe as die bewering EN rede beide korrek is

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NSC 2022

QUESTION 5

5.1 In the diagram below, P(–7 ; 4) is a point in the Cartesian plane. R is a point on the positive x-axis such that obtuse $\hat{POR} = \theta$.



Calculate, **without using a calculator**, the:

5.1.1 Length OP (2)

5.1.2 Value of:

(a) $\tan\theta$ (1)

(b) $\cos(\theta - 180°)$ (2)

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5.2 Determine the general solution of: $\sin x \cos x + \sin x = 3\cos^2 x + 3\cos x$ (7)

5.3 Given the identity: $\dfrac{\sin 3x}{1-\cos 3x} = \dfrac{1+\cos 3x}{\sin 3x}$

5.3.1 Prove the identity given above. (3)

5.3.2 Determine the values of x, in the interval $x \in [0° ; 60°]$, for which the identity will be undefined. (3)

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QUESTION 6

6.1 **Without using a calculator**, simplify the following expression to a single trigonometric term:

$$\frac{\sin 10^\circ}{\cos 440^\circ} + \tan(360^\circ - \theta).\sin 2\theta \qquad (6)$$

6.2 Given: $\sin(60^\circ + 2x) + \sin(60^\circ - 2x)$

6.2.1 Calculate the value of k if $\sin(60^\circ + 2x) + \sin(60^\circ - 2x) = k\cos 2x$. (3)

6.2.2 If $\cos x = \sqrt{t}$, **without using a calculator**, determine the value of $\tan 60^\circ[\sin(60^\circ + 2x) + \sin(60^\circ - 2x)]$ in terms of t. (3)

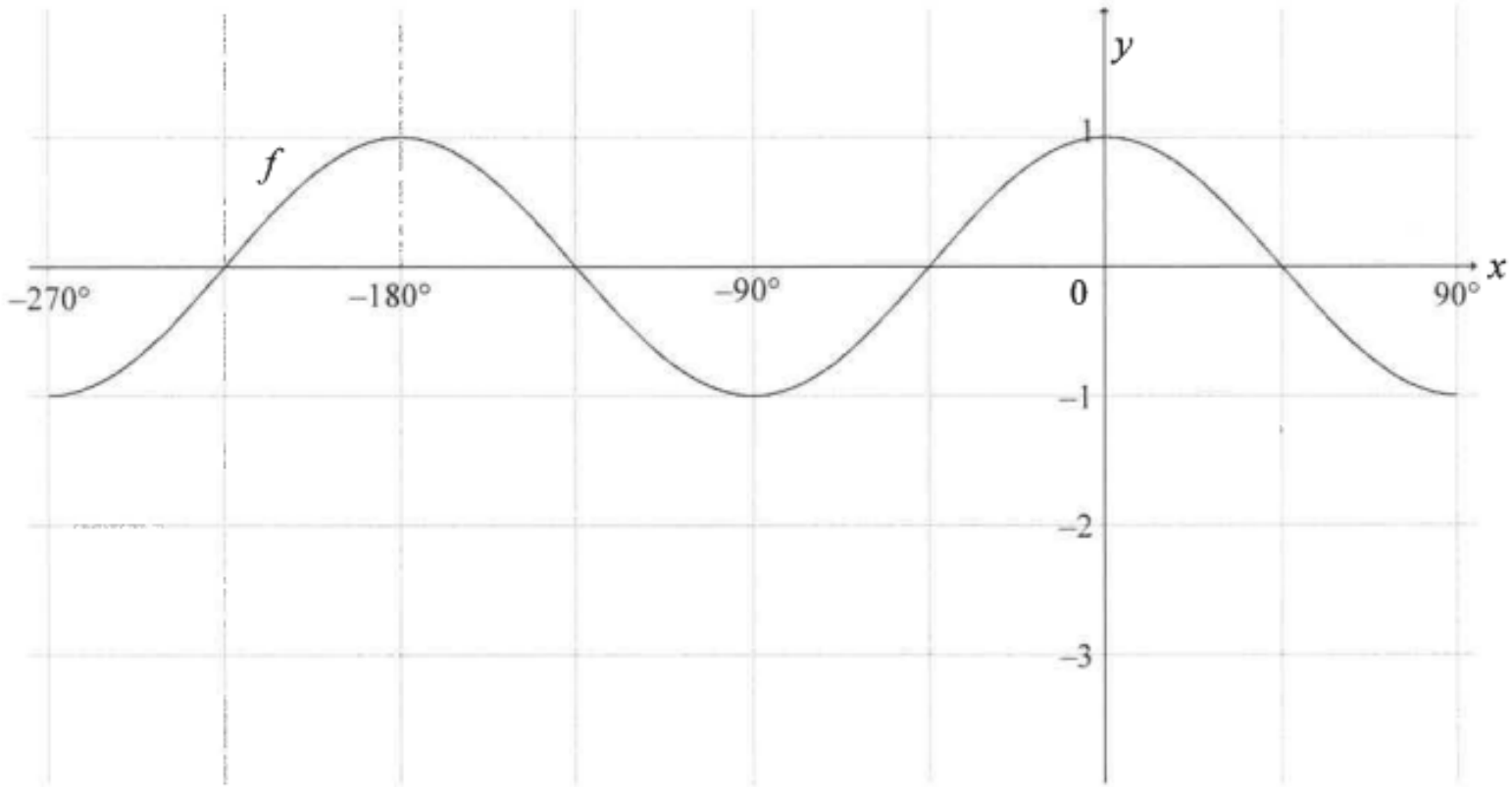
[12]

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QUESTION 6

In the diagram, the graph of $f(x) = \cos 2x$ is drawn for the interval $x \in [-270°; 90°]$.



6.1 Draw the graph of $g(x)=2\sin x-1$ for the interval $x\in[-270°;90°]$ on the grid given in your ANSWER BOOK. Show ALL the intercepts with the axes, as well as the turning points. (4)

6.2 Let A be a point of intersection of the graphs of f and g. Show that the x-coordinate of A satisfies the equation $\sin x=\frac{-1+\sqrt{5}}{2}$. (4)

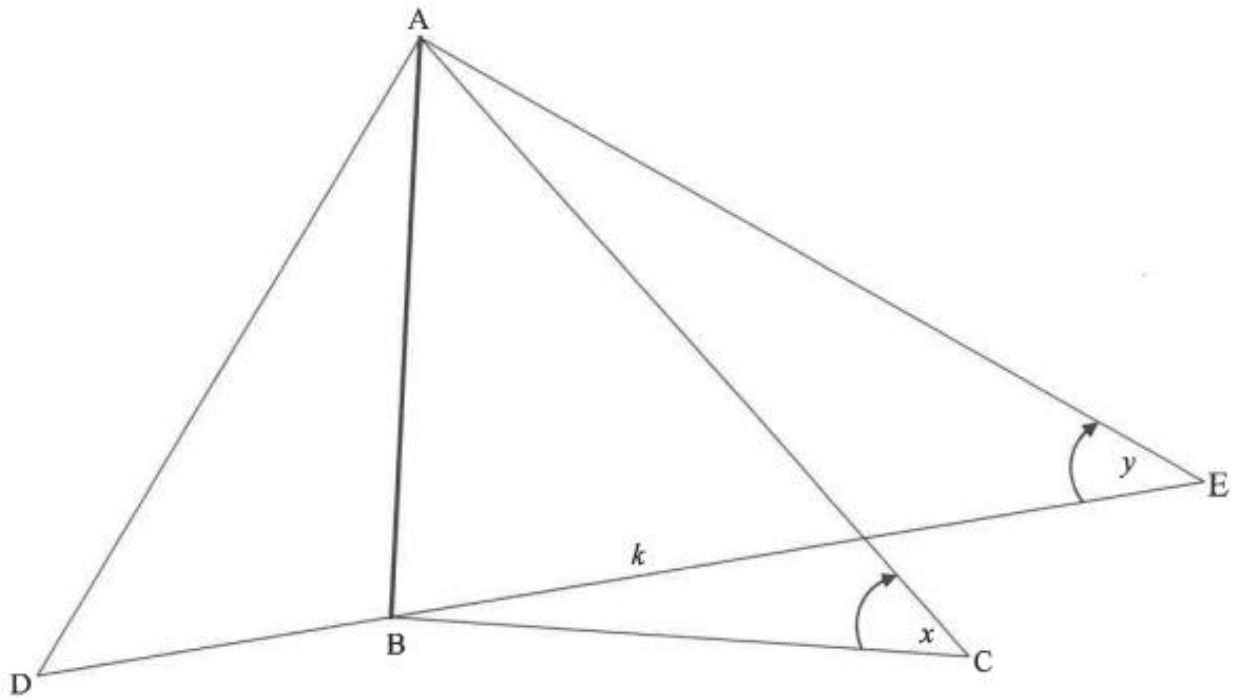
6.3 Hence, calculate the coordinates of the points of intersection of graphs of f and g for the interval $x\in[-270°;90°]$. (4)

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QUESTION 7

AB represents a vertical netball pole. Two players are positioned on either side of the netball pole at points D and E such that D, B and E are on the same straight line. A third player is positioned at C. The points B, C, D and E are in the same horizontal plane. The angles of elevation from C to A and from E to A are x and y respectively. The distance from B to E is k.



7.1 Write down the size of $A\hat{B}C$. (1)

7.2 Show that $AC = \frac{k.\tan y}{\sin x}$ (4)

7.3 If it is further given that $D\hat{A}C = 2x$ and AD = AC, show that the distance DC between the players at D and C is $2k\tan y$. (5)

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THANK YOU