education

Department:
Education
North West Provincial Government
REPUBLIC OF SOUTH AFRICA

BOJANALA DISTRICT

GRADE 11

MATHEMATICS TEST

17 MARCH 2026

MARKS: 75

TIME: 1,5 hours

This question paper consists of 5 pages

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

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

QUESTION 1

1.1 Solve for x:

1.1.1 $3x^2 - 18x = 0$ (2)

1.1.2 $5x(x-3) = 2$ (correct to TWO decimals) (4)

1.1.3 $2.3^{x+1} - 3^x = \frac{5}{9}$ (3)

1.2 Given: $k - 5 = \frac{14}{k}$

1.2.1 Solve for k. (3)

1.2.2 Hence, or otherwise, solve for x if $\sqrt{4-x} = 5 + \frac{14}{\sqrt{4-x}}$ (4)

1.3 Solve for x and y simultaneously:
$x - 2y = 4$ and $2x^2 - 4x - xy - 2y - y^2 = 0$ (7)

[23]

QUESTION 2

2.1 Evaluate the following WITHOUT using a calculator:

2.1.1 $\left(\frac{3-\sqrt{a}}{\sqrt{2}} + \frac{4+\sqrt{a}}{\sqrt{2}}\right)^2$ (3)

2.1.2 $\sqrt{5}.\sqrt{125} - \frac{5^x.5^{x+1}}{5^{2x}}$ (3)

2.2 Prove that $\frac{\sqrt{2}}{\sqrt{2}+1} + \frac{4}{\sqrt{2}} = 2 + \sqrt{2}$, WITHOUT the use of a calculator. (4)

[10]

QUESTION 3

3.1 Given that $P = \dfrac{\sqrt{1-3x-4x^2}}{x-\sqrt{2}}$:

For what value(s) of x will P be :

3.1.1 Undefined? (1)

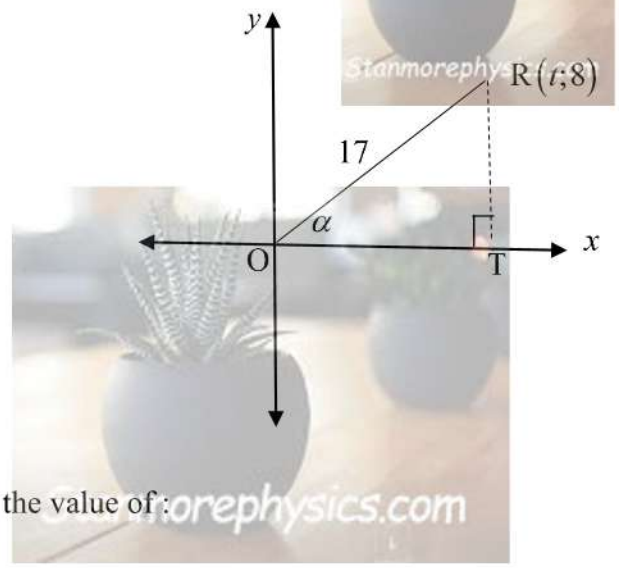
3.1.2 non-real? (4)

3.2 Prove that the equation $6x^2 + 2px - 3x - p = 0$ has rational roots. (4)

[9]

QUESTION 4

4.1 The point $R(t;8)$ lies in the first quadrant such that $OR = 17$ units and $T\hat{O}R = \alpha$ as shown in the diagram below:



Determine the value of:

4.1.1 t (2)

4.1.2 $\sin^2\alpha - \cos^2\alpha$ (3)

4.2 If $\tan 24° = p$, determine the following in terms of p:

4.2.1 $\tan 204°$ (2)

4.2.2 $\cos 246°$ (5)

[12]

QUESTION 5

5.1 Simplify the expression: $\dfrac{\sin(-\theta).\cos(\theta+180°)-\cos(90°+\theta)}{\sin(450°-\theta)+\cos 360°}$ (7)

5.2 Simplify the following:

5.2.1 $\sin 35°.\tan 55°$ (3)

5.2.2 $\dfrac{\cos^2 150°.\sin(-30°).\cos 353°}{\tan 405°.\sin 263°}$ (7)

5.3 Prove the identity: $\dfrac{\sin^2 x-\cos^2 x}{\cos x\left[\sin(180°-x)-\cos x\right]}-1=\tan x$ (4)

[21]

TOTAL: 75