



**GAUTENG PROVINCE**  
EDUCATION  
REPUBLIC OF SOUTH AFRICA

**PREPARATORY EXAMINATION**  
**VOORBEREIDENDE EKSAMEN**  
**2021**

**AMENDMENTS TO THE MARKING**  
**GUIDELINES**

**(10611)**

**MATHEMATICS (PAPER 1)/WISKUNDE (VRAESTEL 1)**

The following notes and amendments are implemented to clarify issues raised over the question paper and the marking guidelines.

**NOTES:**

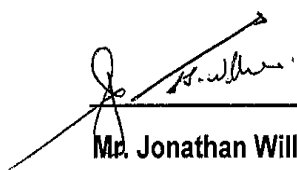
|       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
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| 1.1.4 | <p>The last line in the marking guideline should read:</p> $x = 5 \text{ or } x \neq -1$ <p>The marking criteria remains unchanged.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 1.2   | <p><math>(3x - y)^2 + (x - 5)^2 = 0</math></p> <p>The question is valid.</p> <p>Any value (expression) squared is <math>\geq 0</math> . The only way in which the sum of two squared terms can be equal to zero is if each term is equal to zero.</p> <p>Asking the simultaneous question in this manner raised the cognitive demand of an otherwise routine question.</p>                                                                                                                                                                                                                                                                                         |
| 1.4   | <p>Calculate the maximum value of S if: <math>S = \frac{6}{x^2 + 2}</math></p> <p>The suggestion that an alternative answer to the above question in the final marking guideline should be via a trial-and-error method, is rejected.</p> <p>It is required of candidates to understand that the minimum value is at 2, by applying either application of a formula or the use of the derivative.</p> <p>It is strongly <b>discouraged</b> that a trial-and-error method should be inserted into the marking guideline as an alternative answer.</p> <p>The ruling on this question as an alternative answer should be:</p> <p><b>Answer only, full marks.</b></p> |

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| 3.1.2 | <b>ALTERNATIVE SOLUTION</b><br><br>$S_{\infty} = \frac{a}{1-r}$ $S_{\infty} = \frac{5(3x+1)}{1-(3x+1)}$ $S_{\infty} = \frac{5\left(3\left(-\frac{1}{6}\right)+1\right)}{1-\left(3\left(-\frac{1}{6}\right)+1\right)}$ $S_{\infty} = 5$ | ✓ substitute $a$ into correct formula<br>✓ substitute $r$<br>✓ substitute $x = -\frac{1}{6}$<br>✓ answer<br><div style="text-align: right;">(4)</div> |
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| 9.2 | <p>The Surface area formula of the cylinder should have read:<br/> <math>S = 2\pi r^2 + 2\pi rh</math></p> <p>Even though the candidate will not determine the desired outcome when applying an incorrect formula, the candidate must (will) at least determine the following calculation in order to be awarded marks without penalty.</p> $S = 10(2\pi r^2 + 2\pi h) + 10(4\pi r^2)$ $= 20\pi r^2 + 20\pi h + 40\pi r^2$ $= 60\pi r^2 + 20\pi h$ $= 60\pi r^2 + 20\pi\left(\frac{6}{\pi r^2}\right)$ $= 60\pi r^2 + \frac{120}{r^2}$ | ✓ area of 10 cylinders<br>✓ area of 10 spheres<br><br>✓ simplification<br>✓ substitution of $h$<br><div style="text-align: right;">(4)</div> |
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| 9.3  | <p>This question scaffolds with Q9.2, therefore candidates may either take the expression for S from Q9.2 or will use their solution obtained in question Q9.2 which has been dealt with above.</p> <p>Hence the marking guideline should be as follows:</p> $S' = 120\pi r - 120r^{-2}$ $120\pi r - \frac{120}{r^2} = 0$ $120\pi r^3 - 120 = 0$ $r^3 = \frac{120}{120\pi}$ $r = \frac{1}{\frac{1}{\pi^{\frac{1}{3}}}}$ $= 0,68cm$ <p><b>NOTE: Derivative = 0 must be stated NOT implied.</b></p> <p style="text-align: center;"><b>OR</b></p> $60\pi r^2 + 120r^{-2} = 0$ $\pi + 2r^{-4} = 0$ $r^{-4} = -\frac{\pi}{2}$ $r = \left(-\frac{\pi}{2}\right)^{-\frac{1}{4}}$ $r = -0.89$ <p>but <math>r</math> cannot be negative, <math>\therefore r = 0.89</math></p> <p><b>NOTE: Derivative = 0 must be stated NOT implied.</b></p> <p style="text-align: center;"><b>Candidate must not be penalised for leaving <math>r</math> as a negative value.</b></p> | <p>✓ derivative = 0</p> <p>✓ <math>r^3</math> as subject</p> <p>✓ answer</p> <p style="text-align: center;"><b>OR</b></p> <p>✓ derivative = 0</p> <p>✓ <math>r^{-4}</math> as subject</p> <p>✓ answer</p> <p style="text-align: right;">(3)</p> |
| 10.3 | <p>All candidates <b>MUST</b> be credited with the total marks for the question regardless of whether they attempted or did not attempt the question.</p> <p><b>Mark value = 2</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                 |

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| 10.4 | <p>This question scaffolds partially from Q10.3.</p> <ul style="list-style-type: none"> <li>✓ The first mark is applicable and independent of Q10.3. The candidate should be awarded the mark for <math>P(C') = 0,72</math></li> <li>✓ The second mark is dependent on Q10.3. Whatever value the candidates uses as the sample space from Q10.3, CA to determine the answer to this question. If a candidate did not attempt Q10.3 a candidate may be awarded the first 1 mark which is independent of Q10.3 but not the second mark as the candidate did not attempt Q10.3.</li> </ul> <p>The marking criteria stands:</p> <ul style="list-style-type: none"> <li>✓ <math>P(C')</math></li> <li>✓ answer</li> </ul> <p style="text-align: right;">(2)</p> |                                                                                                                                                                            |
| 11.2 | <p>The interpretation of this question can be viewed as linguistically different in the Afrikaans and English versions of the question paper.</p> <p>The following alternative answer can be accepted:</p> <p style="text-align: center;"><b>OR</b></p> <p>Number of arrangements of persons 1 and 2 = <math>2!</math></p> <p>Number of arrangements if persons 1 and 2 are grouped = <math>(n-1)!</math></p> <p><math>\therefore 2!(n-1)!</math></p>                                                                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"> <li>✓ <math>2!</math></li> <li>✓ <math>(n-1)!</math></li> <li>✓ <math>2! (n-1)!</math></li> </ul> <p style="text-align: right;">(3)</p> |

  
 Mr. Jonathan Williams

**DIRECTOR: EXAMINATIONS MANAGEMENT**

13/9/2021