



**NATIONAL  
SENIOR CERTIFICATE /  
NASIONALE  
SENIOR SERTIFIKAAT**

**GRADE/GRAAD 11**

**NOVEMBER 2022**

**TECHNICAL MATHEMATICS P1 /  
TEGNIESE WISKUNDE V1**

**MARKING GUIDELINE / NASIENRIGLYN**

**MARKS/  
PUNTE:** 150

| <b>Marking Codes /Nasienkodes</b> |  |
|-----------------------------------|--|
| <b>A</b>                          | Accuracy / <i>Akkuraatheid</i>   |
| <b>CA</b>                         | Consistent Accuracy / <i>Deurlopende akkuraatheid</i>                                    |
| <b>M</b>                          | Method / <i>Metode</i>   |
| <b>R</b>                          | Rounding / <i>Afronding</i>  |
| <b>NPR</b>                        | No Penalty for Rounding / <i>Geen penalisering vir afronding</i>                         |
| <b>NPU</b>                        | No Penalty for Units omitted / <i>Geen penalisering vir eenhede uitgelaat</i>            |
| <b>S</b>                          | Simplification / <i>Vereenvoudiging</i>  |
| <b>SF</b>                         | Substitution in the correct Formula / <i>Korrekte vervanging in die korrekte formule</i> |
| <b>AO</b>                         | Answer Only / <i>Slegs antwoord</i>  |

---

This marking guideline consists of 14 pages. /  
*Hierdie nasienriglyn bestaan uit 14 bladsye.*

---

| QUESTION/VRAAG 1 |  |   |  |     |
|------------------|--|---|--|-----|
| 1.1              |  |   |  |     |
| 1.1.1            | $(3 - \sqrt{x})(3 + \sqrt{x})$ $= 9 - x$   | $\checkmark 9$<br>$\checkmark -x$   | <b>A</b><br><b>A</b>   | (2) |
| 1.1.2            | $\left(\frac{3}{3^{3x}} + \frac{2}{3^{3x}}\right) \div \frac{10}{27^x}$ $= \frac{5}{3^{3x}} \times \frac{27^x}{10}$ $= \frac{5}{3^{3x}} \times \frac{3^{3x}}{2.5}$ $= \frac{1}{2}$   | $\checkmark \frac{5}{3^{3x}}$<br>$\checkmark \times \frac{27^x}{10}$<br>$\checkmark$ Prime factors /<br><i>Priemfaktore</i><br>$\checkmark \frac{1}{2}$   | <b>A</b><br><b>A</b><br><b>CA</b><br><b>CA</b>   | (4) |
| 1.1.3            | $\frac{\sqrt{2}(\sqrt{12} + \sqrt{75})}{\sqrt{6}}$ $= \frac{\sqrt{2}(\sqrt{2^2 \cdot 3} + \sqrt{5^2 \cdot 3})}{\sqrt{2 \cdot 3}}$ $= \frac{\sqrt{2} \cdot \sqrt{3}(2 + 5)}{\sqrt{2 \cdot 3}}$ $= 7$ <p style="text-align: center;"><b>OR / OF</b></p> $\frac{\sqrt{2}(\sqrt{12} + \sqrt{75})}{\sqrt{6}}$ $= \frac{\sqrt{2}(\sqrt{4 \cdot 3} + \sqrt{25 \cdot 3})}{\sqrt{2 \cdot 3}}$ $= \frac{\sqrt{2}(2\sqrt{3} + 5\sqrt{3})}{\sqrt{2 \cdot 3}}$ $= \frac{\sqrt{2}(7\sqrt{3})}{\sqrt{2 \cdot 3}}$ $= 7$ | $\checkmark$ Prime factors/<br><i>Priemfaktore</i><br>$\checkmark$ Common factor /<br><i>Gemene faktor</i><br>$\checkmark$ Simplification /<br><i>Vereenvoudiging</i><br>$\checkmark$ Simplification /<br><i>Vereenvoudiging</i><br><p style="text-align: center;"><b>OR/OF</b></p> $\checkmark$ Prime factors /<br><i>Priemfaktore</i><br>$\checkmark$ Common Factor /<br><i>Gemene faktor</i><br>$\checkmark$ Simplification /<br><i>Vereenvoudiging</i><br>$\checkmark$ Simplification /<br><i>Vereenvoudiging</i> | <b>A</b><br><b>CA</b><br><b>CA</b><br><b>CA</b><br><b>A</b><br><b>CA</b><br><b>CA</b><br><b>CA</b> | (4) |




|             |   |   |  |            |
|-------------|---|---|--|------------|
| 1.3.2       | <p><b>Binary Quotient to Decimal /</b><br/> <b><i>Bineêre kwosiënt tot desimaal</i></b></p> $1 \quad 1 \quad 0 \quad 1_2$ $= 1 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0$ $= 8 + 4 + 0 + 1$ $= 13$ <p style="text-align: center;"><b>OR/OF</b></p> <p><b>Dividend/Deeltal:</b></p> $1 \quad 0 \quad 0 \quad 1 \quad 1 \quad 1_2$ $= 1 \times 2^5 + 0 \times 2^4 + 0 \times 2^3 + 1 \times 2^2 + 1 \times 2^1 + 1 \times 2^0$ $= 32 + 0 + 0 + 4 + 2 + 1$ $= 39$ <p><b>Divisor/Deler:</b></p> $1 \quad 1_2$ $= 1 \times 2^1 + 1 \times 2^0$ $= 2 + 1$ $= 3$ <p><b>Division/Deelsomme</b></p> $39 \div 3 = 13$ | <p>✓ M</p> <p>✓ S</p> <p>✓ S</p> <p style="text-align: center;"><b>OR/OF</b></p> <p>✓ M</p> <p>✓ M</p> <p>✓ S</p> | <p>A</p> <p>CA</p> <p>CA</p> <p>A</p> <p>A</p> <p>CA</p> | <p>(3)</p> |
| 1.4         | $280\,000\,000 = 2,8 \times 10^{-7}$  | <p>✓ 2,8</p> <p>✓ <math>10^{-7}</math></p>  | <p>A</p> <p>A</p>  | <p>(2)</p> |
| <b>[30]</b> |   |   |  |            |

| QUESTION/VRAAG 2 |   |   |  |     |
|------------------|---|---|--|-----|
| 2.1              |   |   |  |     |
| 2.1.1            | $\frac{1}{(x)^{\frac{5}{3}}} = 32$ $(x)^{-\frac{5}{3}} = 2^5$ $(x)^{-\frac{5}{3} \times -\frac{3}{5}} = 2^{5 \times -\frac{3}{5}}$ $x = 2^{-3} = \frac{1}{8}$   | $\checkmark (x)^{-\frac{5}{3}}$ $\checkmark \text{ Prime factors / Priemfaktore}$ $\checkmark \text{ Simplification / Vereenvoudiging}$ $\checkmark x = 2^{-3} / \frac{1}{8}$   | <p>A</p> <p>A</p> <p>CA</p> <p>CA</p>                                | (4) |
| 2.1.2            | $\sqrt{x+5} - x = 3$ $\sqrt{x+5} = x+3$ $(\sqrt{x+5})^2 = (x+3)^2$ $x+5 = x^2 + 6x+9$ $0 = x^2 + 5x+4$ $0 = (x+4)(x+1) \text{ OR / OF } x = \frac{-5 \pm \sqrt{5^2 - 4(1)(4)}}{2(1)}$ $x \neq -4 \text{ or/of } x = -1$ $\therefore x = -1$ | $\checkmark \text{ Transposing/ oorbring van } x$ $\checkmark \text{ Squaring both sides/ kwadreeer beide kante}$ $\checkmark \text{ Standard form / standaardvorm}$ $\checkmark \text{ Factors / Formula Faktore / Formule}$ $\checkmark x \neq -4 \text{ or/of } x = -1$ $\checkmark x = -1, \text{ correct value /korrekte waarde}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p><b>Accept/aanvaar</b><br/><math>x \neq -4</math></p> </div> | <p>S</p> <p>CA</p> <p>CA</p> <p>CA</p> <p>CA</p> <p>CA</p> <p>CA</p> | (6) |
| 2.1.3            | $\log_x 3 = -1$ $x^{-1} = 3$ $\therefore x = \frac{1}{3}$   | $\checkmark x^{-1} = 3$ $\checkmark x = \frac{1}{3}$  | <p>A</p> <p>CA</p>   | (2) |

|       |   |   |   |            |
|-------|---|---|---|------------|
| 2.1.4 | $\log_a (x-8) - \log_a 24 = -\log_a (x+2)$ $\log_a (x-8) = \log_a 24 - \log_a (x+2)$ $\log_a (x-8) = \log_a \left( \frac{24}{x+2} \right)$ $x-8 = \frac{24}{x+2}$ $(x-8)(x+2) = 24$ $x^2 - 6x - 16 - 24 = 0$ $x^2 - 6x - 40 = 0$ $(x-10)(x+4) = 0$ $x = 10 \text{ or } x \neq -4$ $\therefore x = 10$ <p style="text-align: center;"><b>OR / OF</b></p> $\log_a (x-8) + \log_a (x+2) - \log_a 24 = 0$ $\log_a \frac{(x-8)(x+2)}{24} = 0$ $a^0 = \frac{(x-8)(x+2)}{24}$ $1 = \frac{(x-8)(x+2)}{24}$ $(x-8)(x+2) = 24$ $x^2 - 6x - 16 - 24 = 0$ $x^2 - 6x - 40 = 0$ $(x-10)(x+4) = 0$ $x = 10 \text{ or/of } x \neq -4$ $\therefore x = 10$ | <p>✓ Log property / eienskap</p> <p>✓ Log property / eienskap</p> <p>✓ S</p> <p>✓ Standard form / standaardvorm</p> <p>✓ Factors / Formula<br/>Faktore / Formule</p> <p>✓ both values of <math>x</math> / beide waardes van <math>x</math></p> <p>✓ <math>x = 10</math>, correct value / korrekte waarde</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <b>Accept/aanvaar</b><br/> <math>x \neq -4</math> </div> <p><b>OR/OF</b></p> <p>✓ Log property/eienskap</p> <p>✓ Exponential form / Eksponensiële vorm</p> <p>✓ Exponent 0/ Eksponent 0</p> <p>✓ Standard form / Standaardvorm</p> <p>✓ Factors / Formula<br/>Faktore / Formule</p> <p>✓ both values of <math>x</math> / Beide waardes van <math>x</math></p> <p>✓ <math>x = 10</math>, correct value / korrekte waarde</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <b>Accept/aanvaar</b><br/> <math>x \neq -4</math> </div> | <p><b>A</b></p> <p><b>CA</b></p> <p><b>CA</b></p> <p><b>CA</b></p> <p><b>CA</b></p> <p><b>CA</b></p> <p><b>CA</b></p> <p><b>CA</b></p> <p><b>CA</b></p> <p><b>A</b></p> <p><b>CA</b></p> <p><b>CA</b></p> <p><b>CA</b></p> <p><b>CA</b></p> <p><b>CA</b></p> <p><b>CA</b></p> <p><b>CA</b></p> <p><b>CA</b></p> | <p>(7)</p> |
|-------|---|---|---|------------|

|              |  |   |                                       |            |
|--------------|--|---|---------------------------------------|------------|
| <p>2.2</p>   | $5 \cdot 2^{1-x} + 2^{2-x} = \frac{7}{2^{x-1}}$ $\text{LHS/LK} = 5 \cdot 2^1 \cdot 2^{-x} + 2^2 \cdot 2^{-x}$ $\text{LHS/LK} = 2^{-x} (5 \cdot 2^1 + 2^2)$ $\text{LHS/LK} = 2^{-x} (14)$ $\text{LHS/LK} = \frac{14}{2^x}$ $\text{LHS/LK} = \frac{2 \cdot 7}{2^x}$ $\therefore \text{LHS/LK} = \frac{7}{2^{x-1}} = \text{RHS/RK}$ | <p>✓ Power rule / <i>mag reël</i></p> <p>✓ Common factor / <i>gemeenskaplike faktor</i></p> <p>✓ Simplification / <i>Vereenvoudiging</i></p> <p>✓ Prime factors / <i>Priemfaktore</i></p> | <p>A</p> <p>CA</p> <p>A</p> <p>CA</p> | <p>(4)</p> |
| <p>2.3</p>   |  |   |                                       |            |
| <p>2.3.1</p> | $\text{Height/Hoogte (m)} = \sqrt{\frac{\text{Weight/Gewig (kg)}}{\text{BMI/LMI}}}$ $(\text{Height/Hoogte})^2 = \frac{\text{Weight/Gewig (kg)}}{\text{BMI/LMI}}$ $\therefore \text{Weight/Gewig} = \text{BMI/LMI} \times (\text{Height/Hoogte})^2 \text{ kg}$  | <p>✓ Squaring both sides / <i>Kwadreer beide kante</i></p> <p>✓ S</p>   | <p>A</p> <p>CA</p>                    | <p>(2)</p> |
| <p>2.3.2</p> | $1960 \div 1\,000 = 1,96 \text{ m}$ $\text{Weight/Gewig} = \text{BMI/LMI} \times (\text{Height/Hoogte})^2 \text{ kg}$ $\text{Weight/Gewig} = 29,9(1,96)^2$ $\text{Weight/Gewig} = 114,86 \text{ kg}$   | <p>✓ 1,96 m</p> <p>✓ Substitution / <i>Vervanging</i></p> <p>✓ 114,86 kg</p>  | <p>A</p> <p>CA</p> <p>CA</p>          | <p>(3)</p> |
| <p>[28]</p>  |  |   |                                       |            |

| QUESTION/VRAAG 3 |   |  |   |     |
|------------------|---|--|---|-----|
| 3.1              |   |  |   |     |
| 3.1.1            | $x(x-2)-15=0$<br>$x^2-2x-15=0$<br>$(x-5)(x+3)=0$<br>$\therefore x=5$ or/of $x=-3$   | ✓ Standard form /<br><i>standaardvorm</i><br>✓ Factors/Formula /<br><i>Faktore / Formule</i><br>✓ 5<br>✓ -3  | <b>A</b><br><b>CA</b><br><b>CA</b><br><b>CA</b>             | (4) |
| 3.1.2            | $2x - \frac{7}{x} = -3$<br>$2x^2 - 7 = -3x$<br>$2x^2 + 3x - 7 = 0$<br>$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$<br>$x = \frac{-(3) \pm \sqrt{(3)^2 - 4(2)(-7)}}{2(2)}$<br>$\therefore x = 1,27$ or/of $x = -2,77$  | ✓ Simplification<br><i>/Vereenvoudiging</i><br><br>✓ Standard form /<br><i>Standaardvorm</i><br><br>✓ Substitution /<br><i>Vervanging</i><br><br>✓✓ Each value of $x$<br><i>Elke waarde van <math>x</math></i> | <b>A</b><br><br><b>CA</b><br><br><b>SF</b><br><br><b>CA</b> | (5) |
| 3.1.3            | $x^2 - x - 12 \leq 0$<br>$(x-4)(x+3) \leq 0$ <b>OR / OF</b> $x = \frac{1 \pm \sqrt{(-1)^2 - 4(1)(-12)}}{2(1)}$<br>$\therefore$ CVs: -3 and/en 4<br>$\therefore -3 \leq x \leq 4$<br> | ✓ Factors/ Formula<br><i>Faktore / Formule</i><br><br>✓ Critical values /<br><i>Kritiese waardes</i><br>✓ Notation / <i>Notasie</i><br><br>✓ Number line /<br><i>Getalleglyn</i>                               | <b>A</b><br><br><b>CA</b><br><br><b>A</b><br><br><b>CA</b>  | (4) |



|     |  |  |   |            |
|-----|--|--|---|------------|
| 3.2 | <p><math>y - x = -2</math> ..... (1) and/en <math>x^2 - x - 10 = y</math>.....(2)</p> <p><math>y = x - 2</math>..... (3)</p> <p>Substitute/Vervang (3) into/in (2):</p> <p><math>x^2 - x - 10 = x - 2</math></p> <p><math>x^2 - 2x - 8 = 0</math></p> <p><math>(x - 4)(x + 2) = 0</math></p> <p><math>\therefore x = 4</math> or/of <math>x = -2</math></p> <p><math>y = 4 - 2</math> or/of <math>y = -2 - 2</math></p> <p><math>y = 2</math> or/of <math>y = -4</math></p> <p style="text-align: center;"><b>OR/OF</b></p> <p><math>y + 2 = x</math> ..... (3)</p> <p>Substitute/Vervang (3) into/in (2):</p> <p><math>(y + 2)^2 - (y + 2) - 10 = y</math></p> <p><math>y^2 + 4y + 4 - y - 2 - 10 - y = 0</math></p> <p><math>y^2 + 2y - 8 = 0</math></p> <p><math>(y - 2)(y + 4) = 0</math></p> <p><math>\therefore y = 2</math> or/of <math>y = -4</math></p> <p><math>x = 4 + 2</math> or/of <math>y = -4 + 2</math></p> <p><math>x = 4</math> or/of <math>x = -2</math></p> | <p>✓ <i>y</i>-subject/onderwerp</p> <p>✓ Substitution/<br/>Vervanging</p> <p>✓ Standard form /<br/>Standaardvorm</p> <p>✓ Factors/ Formula<br/>Faktore / Formule</p> <p>✓ Both <i>x</i>- values / Beide<br/><i>x</i>-waardes</p> <p>✓ Both <i>y</i>- values / Beide<br/><i>y</i>-waardes</p> <p style="text-align: center;"><b>OR/OF</b></p> <p>✓ <i>y</i>-subject/onderwerp</p> <p>✓ Substitution/<br/>Vervanging</p> <p>✓ Standard form/<br/>Standaardvorm</p> <p>✓ Factors/ Formula /<br/>Faktore / Formule</p> <p>✓ Both <i>y</i>- values / Beide<br/><i>y</i>-waardes</p> <p>✓ Both <i>x</i>- values / Beide<br/><i>x</i>-waardes</p> | <p>A</p> <p>CA</p> <p>CA</p> <p>CA</p> <p>CA</p> <p>CA</p> <p style="text-align: center;"><b>OR/OF</b></p> <p>A</p> <p>CA</p> <p>CA</p> <p>CA</p> <p>CA</p> <p>CA</p> <p>CA</p> | <p>(6)</p> |
|-----|--|--|---|------------|

|       |   |  |   |                      |
|-------|---|--|---|----------------------|
| 3.3   |   |  |   |                      |
| 3.3.1 | Perimeter/Omtrek = $2l + 2b$<br>$2x + 2y = 18$<br>$\therefore x = 9 - y$  | ✓ Perimeter equation /<br><i>Omtrek vergelyking</i><br>✓ Substitution /<br><i>Vervanging</i>   | A<br><br>A                                    | (2)                  |
| 3.3.2 | Area = $xy$<br>$\therefore$ Area = $(9 - y)y$   | ✓ $(9 - y)y$   | CA  | (1)                  |
| 3.3.3 | $(9 - y)y = 18$<br>$9y - y^2 = 18$<br>$0 = y^2 - 9y + 18$<br>$0 = (y - 6)(y - 3)$<br>$\therefore y = 6$ or/of $y = 3$<br>$x = 9 - 6$ or /of $x = 9 - 3$<br>$x = 3$ or/of $x = 6$<br>$\therefore y = 3$ and/en $x = 6$ | ✓ Equation /<br><i>Vergelyking</i><br>✓ Standard form /<br><i>Standaardvorm</i><br>✓ Factors/ Substitution<br><i>Faktore/Vervanging</i><br>✓ Both y values / <i>beide</i><br><i>y-waardes</i><br>✓ Correct values /<br><i>korrekte waardes</i> | A<br><br>CA<br><br>CA<br><br>CA<br><br>CA     | (5)                  |
| 3.4   | $\Delta = b^2 - 4ac$<br>$= (1)^2 - 4(1)(1) = -3$<br>$\therefore$ Roots are non-real<br>$\therefore$ <i>Wortels is nie-reëel</i>   | <b>Accept imaginary<br/>/ Aanvaar<br/>imaginêr</b>   | ✓ SF<br>✓ -3<br>✓ Non-real / <i>nie-reëel</i> | A<br>CA<br>CA<br>(3) |
| 3.5   | $\Delta = b^2 - 4ac = 0$<br>$(1)^2 - 4(1)c = 0$<br>$\therefore c = \frac{1}{4}$   | ✓ $\Delta = 0$<br>✓ SF<br>✓ $c = \frac{1}{4}$  | A<br><br>A<br><br>CA                          | (3)                  |
|       |   |  |   | [33]                 |

| QUESTION/VRAAG 4 |  |   |                     |             |
|------------------|--|---|---------------------|-------------|
| 4.1              | (3 ; - 8)  | ✓ 3<br>✓ -8   | A<br>A              | (2)         |
| 4.2              | y int/afsnit:<br>$y = 2(0 - 3)^2 - 8$<br>$y = 10$  | ✓ $x = 0$<br>✓ 10   |                     | (2)         |
| 4.3              | x int/afsnit:<br>$0 = 2(x - 3)^2 - 8$<br>$4 = (x - 3)^2$<br>$\pm 2 = x - 3$<br>$\therefore x = 1$ or/of $x = 5$<br><p style="text-align: center;"><b>OR/OF</b></p> $0 = 2(x^2 - 6x + 9) - 8$<br>$0 = 2x^2 - 12x + 10$<br>$0 = x^2 - 6x + 5$<br>$= (x - 5)(x - 1)$<br>$x = 5$ or / of $x = 1$ | ✓ $y = 0$<br>✓ Simplification / Vereenvoudiging<br>✓ Factors / Faktore<br>✓ both values of $x$ / beide waardes van $x$<br><p style="text-align: center;"><b>OR/OF</b></p> ✓ $y = 0$<br>✓ Simplification/ Vereenvoudiging<br>✓ Factors/Formula Faktore / Formule<br>✓ both values of $x$ | A<br>CA<br>CA<br>CA | (4)         |
| 4.4              |  | ✓ Shape / vorm<br>✓ y intercept / y-afsnit<br>✓ Both x intercepts / beide x-afsnitte<br>✓ Turning point / draaipunt   | A<br>CA<br>CA<br>CA | (4)         |
| 4.5              | $y > - 8$  | ✓ $y > - 8$   | A                   | (1)         |
| 4.6              | (3 ; - 6)  | ✓ 3<br>✓ - 6  | A<br>A              | (2)         |
|                  |  |   |                     | <b>[15]</b> |

| QUESTION/VRAAG 5 |   |  |   |             |
|------------------|---|--|---|-------------|
| 5.1              | $m = \frac{y_2 - y_1}{x_2 - x_1}$ $m = \frac{5 - 0}{0 - \frac{5}{3}}$ $\therefore m = -3$ | ✓ Formula / <i>formule</i><br>✓ Substitution / <i>vervanging</i><br>✓ -3   | <b>F</b><br><br><b>SF</b><br><br><b>CA</b>                    | (3)         |
| 5.2              | $c = 5$   | ✓ 5  | <b>A</b>  | (1)         |
| 5.3              | $q = 3$   | ✓ ✓ 3  | <b>A</b>  | (2)         |
| 5.4              | $p = 1$   | ✓ 1  | <b>A</b>  | (1)         |
| 5.5              | $g(x) = \frac{a}{x-1} + 3$ $5 = \frac{a}{0-1} + 3$ $a = -2$                               | ✓ Substitute/Vervang $p$<br>✓ Substitute/Vervang $q$<br>✓ Substitute point<br>Vervang punt (5;0)<br>✓ value of / <i>waarde van a</i> | <b>CA</b><br><b>CA</b><br><b>A</b><br><b>CA</b>               | (4)         |
| 5.6              | $x \in R, x \neq 1$   | ✓ $x \in R, x \neq 1$  | <b>A</b>  | (1)         |
| 5.7              | $x \leq 5$ or/of $1 < x \leq \frac{5}{3}$   | ✓ $x \leq 5$<br>✓ 1<br>✓ $\frac{5}{3}$<br>✓ correct notation / <i>korrekte notasie</i>   | <b>CA</b><br><b>CA</b><br><b>CA</b><br><b>CA</b><br><b>CA</b> | (4)         |
| 5.8              | $f(x) = \frac{2}{x-1} - 3$  | ✓ $\frac{2}{x-1}$<br>✓ -3  | <b>CA</b><br><br><b>CA</b>                                    | (2)         |
|                  |   |  |   | <b>[18]</b> |

| QUESTION/VRAAG 6 |   |  |  |             |
|------------------|---|--|--|-------------|
| 6.1              | $y = -4$  | $\checkmark -4$  | A  | (1)         |
| 6.2              | At/By C:<br>$y = 2^0 - 4$<br><br>$y = -3$<br><br>At/By D:<br>$0 = 2^x - 4$<br>$2^x = 4$<br><br>$2^x = 2^2$<br><br>$\therefore x = 2$  | $\checkmark x = 0$<br><br>$\checkmark y = -3$<br><br><br>$\checkmark y = 0$<br><br><br>$\checkmark$ Exponential form /<br><i>Eksponensiële vorm</i><br><br>$\checkmark$ Same base / <i>dieselfde</i><br><i>basis</i> | A<br><br>CA<br><br>A<br><br>CA<br><br>CA | (5)         |
| 6.3              | $r^2 = 2^2 = 4$<br><br>$\therefore f(x) = \sqrt{4-x^2}$   | $\checkmark r^2 = 4$<br><br>$\checkmark$ Equation / <i>Vergelyking</i>   | A<br><br>CA                              | (2)         |
| 6.4              | $x = 2$   | $\checkmark$ value of $x$ / <i>waarde van</i><br>$x$   | CA                                       | (1)         |
| 6.5              | EC = $2 - (-3)$ <b>OR/OF</b> EC = $2 + 3$<br><br>EC = 5   | $\checkmark$ M<br><br>$\checkmark$ Length / <i>lengte</i>  | A<br><br>CA                              | (2)         |
| 6.6              | The vertical line cuts the graph of $f$ once. /<br><i>Die vertikale lyn sny die grafiek <math>f</math> eenkeer</i><br><br><b>OR / OF</b><br><br>An association from the domain set to $y$ set is many<br>to one./<br><i>'n Verbintenis vanaf die definisieversameling na die</i><br><i><math>y</math>-versameling is baie tot een</i> | $\checkmark$ Touch once / <i>raak</i><br><i>eenkeer</i><br><br><b>OR / OF</b><br><br>Many to one. /<br><i>baie tot een</i>   | A  | (1)         |
|                  |   |  |  | <b>[12]</b> |

| QUESTION/VRAAG 7     |  |   |  |             |
|----------------------|--|---|--|-------------|
| 7.1                  | $i_{eff} = \left(1 + \frac{i}{m}\right)^m - 1$ $i_{eff} = \left(1 + \frac{0,063}{4}\right)^4 - 1$ <p>Effective Interest Rate <math>\approx 6,45\%</math><br/> <i>Effektiewe rentekoers</i></p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <b>Accept/Aanvaar <math>i_{eff} \approx 6,5\%</math></b> </div> | <p>✓ Formula / <i>Formule</i></p> <p>✓ Substitution / <i>Vervanging</i></p> <p>✓ 6,45%</p>  | <p><b>F</b></p> <p><b>SF</b></p> <p><b>CA</b></p>                  | (3)         |
| 7.2                  | $A = P(1+i)^n$ $8\,949 = 2\,500(1+i)^6$ $3,5796 = (1+i)^6$ $(3,579)^{\frac{1}{6}} - 1 = i$ $i = 0,2368$ <p><math>\therefore</math> Rate/<i>Koers</i> = 23,68%</p>  | <p>✓ <b>F</b></p> <p>✓ <b>SF</b></p> <p>✓ <i>i</i> subject/<i>onderwerp</i></p> <p>✓ Rate as/<i>Koers as</i> %</p>  | <p><b>A</b></p> <p><b>CA</b></p> <p><b>CA</b></p> <p><b>CA</b></p> | (4)         |
| 7.3                  | <p>7.3.1</p> $11\% \text{ of/van R25 000,00} = \frac{11}{100} \times \text{R25 000,00}$ $11\% \text{ of/van R25 000,00} = \text{R2 750,00}$  | <p>✓ <b>M</b></p> <p>✓ R2 750,00</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <b>AO : 2 marks/punte</b> </div> | <p><b>A</b></p> <p><b>A</b></p>                                    | (2)         |
|                      | <p>7.3.2</p> $P = \text{R25 000,00} - \text{R2 750,00} = \text{R22 250,00}$ $A = P(1 + in)$ $A = \text{R22 250,00}(1 + 0,16 \times 4)$ $\therefore A = \text{R36 490,00}$  | <p>✓ <math>P = \text{R2 750,00}</math></p> <p>✓ <b>SF</b></p> <p>✓ Total Amount / <i>Totale bedrag</i></p>  | <p><b>A</b></p> <p><b>CA</b></p> <p><b>CA</b></p>                  | (3)         |
|                      | <p>7.3.3</p> <p>Monthly Repayments/<br/><i>Maandelikse terugbetalings</i> = <math>\frac{\text{R36 490,00}}{4 \times 12}</math></p> <p>Monthly Repayments/<br/><i>Maandelikse terugbetalings</i> = R760, 21</p>   | <p>✓ Method / <i>Metode</i></p> <p>✓ Answer / <i>Antwoord</i></p>   | <p><b>A</b></p> <p><b>CA</b></p>                                   | (2)         |
|                      |  |   |  | <b>[14]</b> |
| <b>TOTAL/TOTAAL:</b> |  |   |  | <b>150</b>  |