



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NASIONALE SENIOR SERTIFIKAAT

GRAAD 10

WISKUNDE V1

MODEL 2012

MEMORANDUM

PUNTE: 100

Hierdie memorandum bestaan uit 7 bladsye.

VRAAG 1

| | | | |
|-------|---|--|-------------|
| 1.1.1 | $(m - 2n)(m^2 - 6mn - n^2)$ $= m^3 - 6m^2n - mn^2 - 2m^2n + 12mn^2 + 2n^3$ $= m^3 - 8m^2n + 11mn^2 + 2n^3$ | <ul style="list-style-type: none"> ✓ uitbreiding ✓ m^3 ; $+2n^3$ ✓ $-8m^2n + 11mn^2$ | (3) |
| 1.1.2 | $\frac{x^3 + 1}{x^2 - x + 1} - \frac{4x^2 - 3x - 1}{4x + 1}$ $= \frac{(x+1)(x^2 - x + 1)}{x^2 - x + 1} - \frac{(4x+1)(x-1)}{4x+1}$ $= x+1 - (x-1)$ $= 2$ | <ul style="list-style-type: none"> ✓✓ $(x+1)(x^2 - x + 1)$ ✓ $(4x+1)(x-1)$ ✓ $x+1 - (x-1)$ ✓ antwoord | (5) |
| 1.2.1 | $6x^2 - 7x - 20$ $= (3x + 4)(2x - 5)$ | <ul style="list-style-type: none"> ✓ $(3x + 4)$ ✓ $(2x - 5)$ | (2) |
| 1.2.2 | $a^2 + a - 2ab - 2b$ $= a(a+1) - 2b(a+1)$ $= (a+1)(a-2b)$ | <ul style="list-style-type: none"> ✓ groepering ✓ $(1+a)$ ✓ $(a-2b)$ | (3) |
| 1.3 | <p>Siende dat $7^2 = 49$ en $8^2 = 64$ en $49 < 51 < 64$, $7 < \sqrt{51} < 8$ i.e. $\sqrt{51}$ lê tussen 7 en 8</p> | <ul style="list-style-type: none"> ✓ $49 < 51 < 64$ ✓ antwoord | (2) |
| 1.4 | <p>Laat $x = 0,\dot{2}\dot{4}\dot{5}$ Dan is $1000x = 245,\dot{2}\dot{4}\dot{5}$ i.e. $999x = 245$ i.e. $x = \frac{245}{999}$ Dus is x 'n rasionale getal.</p> | <ul style="list-style-type: none"> ✓ benoem die veranderlike ✓ $1000x = 245,\dot{2}\dot{4}\dot{5}$ ✓ $999x = 245$ ✓ $x = \frac{245}{999}$ | (4) [19] |

VRAAG 2

| | | |
|--------------|--|--|
| <p>2.1.1</p> | $x^2 - 4x = 21$ $x^2 - 4x - 21 = 0$ $(x + 3)(x - 7) = 0$ $x + 3 = 0 \quad \text{of} \quad x - 7 = 0$ $x = -3 \quad \quad \quad x = 7$ | <p>✓ standaardvorm ✓ faktore</p> <p>✓ antwoorde</p> <p>(3)</p> |
| <p>2.1.2</p> | $96 = 3x^{\frac{5}{4}}$ $32 = x^{\frac{5}{4}}$ $x = (32)^{\frac{4}{5}}$ $= (2^5)^{\frac{4}{5}}$ $= 2^4$ $= 16$ | <p>✓ $32 = x^{\frac{5}{4}}$ ✓ $x = (32)^{\frac{4}{5}}$</p> <p>✓ antwoord</p> <p>(3)</p> |
| <p>2.1.3</p> | $R = \frac{2\sqrt{x}}{3S}$ $\frac{3RS}{2} = \sqrt{x}$ $x = \frac{9R^2S^2}{4}$ | <p>✓ Vermenigvuldig met 3S en deel deur 2 ✓ Kwadreer beide kante</p> <p>(2)</p> |
| <p>2.2</p> | <p>$6q + 7p = 3$.....Vergelyking 1</p> <p>$2q + p = 5$.....Vergelyking 2</p> <p>$6q + 7p = 3$.....Vergelyking 1</p> <p>$14q + 7p = 35$.....vermenigvuldig vergelyking 2 met 7....vergelyking 3</p> <p>Vergelyking 3 – Vergelyking 1:</p> $8q = 32$ $q = 4$ $2(4) + p = 5$ $p = -3$ | <p>✓ $14q + 7p = 35$</p> <p>✓ $8q = 32$ ✓ $q = 4$</p> <p>✓ substitusie ✓ $p = -3$</p> <p>(5) [13]</p> |

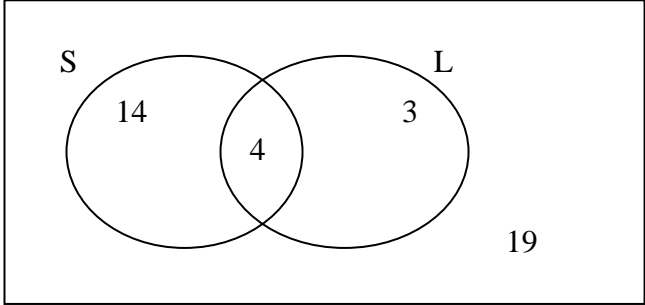
VRAAG 3

| | | | | | |
|-------------|--|---|--|---|-----|
| 3.1.1 | 10 ; 6 ; 2 | <ul style="list-style-type: none"> ✓ 10 ✓ 6 ✓ 2 | (3) | | |
| 3.1.2 | $d = -4$ $T_n = -4n + 14$ | <ul style="list-style-type: none"> ✓ $-4n$ ✓ 14 | (2) | | |
| 3.1.3 | $-4n + 14 < -31$ $-4n < -45$ $n > 11,25$ $n = 12$ | <ul style="list-style-type: none"> ✓ $-4n + 14 < -31$ ✓ $n > 11,25$ ✓ antwoord | (3) | | |
| 3.2 | $T_n = 6n$ $T_{13} = 6(13)$ $= 78$ | OF | $T_n = 3n$ $T_{26} = 3(26)$ $= 78$ | <ul style="list-style-type: none"> ✓ $6n$ ✓ substitusie van 13 ✓ antwoord | (3) |
| | | | | <ul style="list-style-type: none"> ✓ $3n$ ✓ substitusie van 26 ✓ antwoord | (3) |
| [11] | | | | | |

VRAAG 4

| | | | |
|-------------|--|---|-----|
| 4.1 | $A = P(1+i)^n$ $= 4500 \left(1 + \frac{4.25}{100}\right)^{2.5}$ $= R 4993.47$ | <ul style="list-style-type: none"> ✓ $n = 2.5$ ✓ substitusie ✓ antwoord | (3) |
| 4.2.1 | Leningsbedrag = R 5 999 – R 600 = R 5 399 Totale bedrag wat geskuld word = $5\,399[1+(0,08)(1,5)]$ = R 6 046.88 Maandelikse terugbetaling = $\frac{6046.88}{18}$ = R 335.94 | <ul style="list-style-type: none"> ✓ $y = 0$ ✓ 5 399 ✓ $n = 1,5$ ✓ Substitusie ✓ R 6 046.88 ✓ $\div 18$ ✓ R335.94 | (6) |
| 4.2.2 | R 6 046.88 - R 5 399 = R 647.88 | <ul style="list-style-type: none"> ✓ antwoord | (1) |
| 4.3 | 1kg = 1000g $\frac{1000}{28,35} = 35,27336861\dots$ onse $35,27336861\dots \times 978,34 \times 8,79$ = R303 337.16 | <ul style="list-style-type: none"> ✓ omskakeling ✓ deling ✓ vermenigvuldiging ✓ antwoord | (4) |
| [14] | | | |

VRAAG 5

| | | |
|-----------|--|---|
| 5.1.1 | $A \cap B$ OF A en B | ✓ antwoord (1) |
| 5.1.2 | A' OF nie A nie | ✓ antwoord (1) |
| 5.2 | B | ✓ antwoord (1) |
| 5.3.1 | 19 leerdere is regshandig en speel nie sokker nie. | ✓ antwoord (1) |
| 5.3.2 |  <p>A Venn diagram with two overlapping circles, S on the left and L on the right, inside a rectangular universal set. The number 14 is in the part of circle S that does not overlap with L. The number 3 is in the part of circle L that does not overlap with S. The number 4 is in the overlapping region of S and L. The number 19 is in the region outside both circles but inside the rectangle.</p> | ✓ 15 ✓ 4 ✓ 2 ✓ 19 (4) |
| 5.3.3 (a) | $P(L \text{ OF } S) = \frac{14+4+3}{40}$ $= \frac{21}{40}$ | ✓ $15 + 4 + 2$ ✓ 40 ✓ antwoord (3) |
| 5.3.3 (b) | $P(R \text{ EN } S) = \frac{14}{40}$ $= \frac{7}{20}$ | ✓ $\frac{15}{40}$ ✓ antwoord (2) [13] |

VRAAG 6

| | | |
|-----|---|---|
| 6.1 | | <ul style="list-style-type: none"> ✓ vorm van f ✓ x-afsnit van f ✓ x-afsnit van g ✓ y-afsnit van g <p style="text-align: right;">(4)</p> |
| 6.2 | $x = 0$ en $y = 1$ | <ul style="list-style-type: none"> ✓ antwoord ✓ antwoord <p style="text-align: right;">(2)</p> |
| 6.3 | $(-\infty ; 0) \cup (0 ; \infty)$ | <ul style="list-style-type: none"> ✓ waardes ✓ notasie <p style="text-align: right;">(2)</p> |
| 6.4 | $\frac{3}{x} + 1 = -2x - 4$ $\frac{3}{x} = -2x - 5$ $3 = -2x^2 - 5x$ $2x^2 + 5x + 3 = 0$ $(2x + 3)(x + 1) = 0$ $x = -\frac{3}{2} \text{ of } x = -1$ | <ul style="list-style-type: none"> ✓ $\frac{3}{x} + 1 = -2x - 4$ ✓ standaardvorm ✓ faktore ✓✓ antwoorde <p style="text-align: right;">(5)</p> |
| 6.5 | $-1 \leq -2x - 4 < 3$ $3 \leq -2x < 7$ $-1,5 \geq x > -3,5$ $-3,5 < x \leq -1,5$ <p style="text-align: center;">OF $x \in (-3,5 ; -1,5]$</p> | <ul style="list-style-type: none"> ✓ $-1 \leq -2x - 4 < 3$ ✓ $3 \leq -2x < 7$ ✓ antwoord <p style="text-align: right;">(3)</p> |
| 6.6 | $k(x) = 2(-2x - 4)$ $= -4x - 8$ <p>y-afsnit: $(0 ; -8)$</p> | <ul style="list-style-type: none"> ✓ vergelyking van $k(x)$ ✓ antwoord <p style="text-align: right;">(2)</p> |
| 6.7 | x -afsnit: $(2 ; 0)$ y -afsnit: $(0 ; -4)$ | <ul style="list-style-type: none"> ✓ x-afsnit ✓ y-afsnit <p style="text-align: right;">(2)</p> <p style="text-align: right;">[20]</p> |

VRAAG 7

| | | |
|-----|---|--|
| 7.1 | $C(-2; 0)$ | ✓ antwoord (1) |
| 7.2 | $f(x) = ax^2 + q$ $f(x) = a(x^2 - 4)$ $2,5 = a((-3)^2 - 4)$ $2,5 = 5a$ $a = \frac{1}{2}$ $f(x) = \frac{1}{2}(x^2 - 4)$ | ✓ $f(x) = a(x^2 - 16)$ ✓ substitusie van $(-5; 2,25)$ ✓ antwoord (3) |
| 7.3 | Waardeversameling van f : $[-2; \infty)$ | ✓ antwoord (1) |
| 7.4 | Waardeversameling van h : $(-\infty; 0]$ | ✓ notasie ✓ kritieke waardes (2) |
| 7.5 | $g(x) = b^x - 4$ $0 = b^2 - 4$ $4 = b^2$ $b = 2$ $g(x) = 2^x - 4$ | ✓ $g(x) = b^x - 4$ ✓ substitusie ✓ antwoord (3) [10] |

TOTAAL: 100