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	$(m-2n)(m^2-6mn-n^2)$ $= m^3-6m^2n-mn^2-2m^2n+12mn^2+2n^3$ $= m^3-8m^2n+11mn^2+2n^3$	✓ uitbreiding ✓ m^3 ; $+2n^3$ ✓ $-8m^2n+11mn^2$ (3)
1.1.2	$\frac{x^3+1}{x^2-x+1}-\frac{4x^2-3x-1}{4x+1}$ $=\frac{(x+1)(x^2-x+1)}{x^2-x+1}-\frac{(4x+1)(x-1)}{4x+1}$ $= x+1-(x-1)$ $= 2$	✓✓ $(x+1)(x^2-x+1)$ ✓ $(4x+1)(x-1)$ ✓ $x+1-(x-1)$ ✓antwoord (5)
1.2.1	$6x^2-7x-20$ $=(3x+4)(2x-5)$	✓ $(3x+4)$ ✓ $(2x-5)$ (2)
1.2.2	$a^2+a-2ab-2b$ $= a(a+1)-2b(a+1)$ $=(a+1)(a-2b)$	✓groepering ✓ $(1+a)$ ✓ $(a-2b)$ (3)
1.3	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	✓ $49<51<64$ ✓ antwoord (2)
1.4	Laat $x = 0,\dot{2}4\dot{5}$ Dan is $1000x = 245,\dot{2}4\dot{5}$ i.e. $999x = 245$ i.e. $x=\frac{245}{999}$ Dus is x ‘n rasionale getal.	✓ benoem die veranderlike ✓ $1000x = 245,\dot{2}4\dot{5}$ ✓ $999x = 245$ ✓ $x=\frac{245}{999}$ (4) **[19]**

VRAAG 2

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

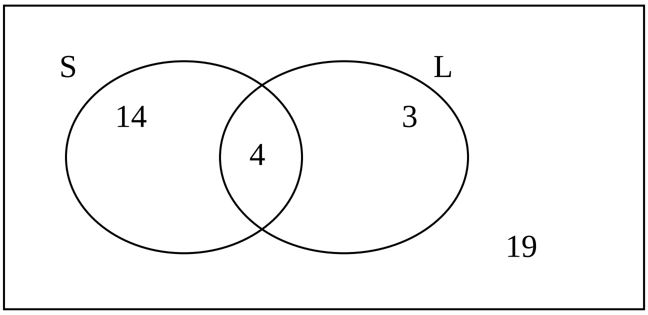
VRAAG 3

3.1.1	10 ; 6 ; 2	✓ 10 ✓ 6 ✓ 2 (3)
3.1.2	$d = -4$ $T_n = -4n + 14$	✓ $-4n$ ✓ 14 (2)
3.1.3	$-4n + 14 < -31$ $-4n < -45$ $n > 11{,}25$ $n = 12$	✓ $-4n + 14 < -31$ ✓ $n > 11{,}25$ ✓ antwoord (3)
3.2	$T_n = 6n$ $T_{13} = 6(13)$ $= 78$ **OF** $T_n = 3n$ $T_{26} = 3(26)$ $= 78$	✓ $6n$ ✓ substitusie van 13 ✓ antwoord (3) ✓ $3n$ ✓ substitusie van 26 ✓ antwoord (3) **[11]**

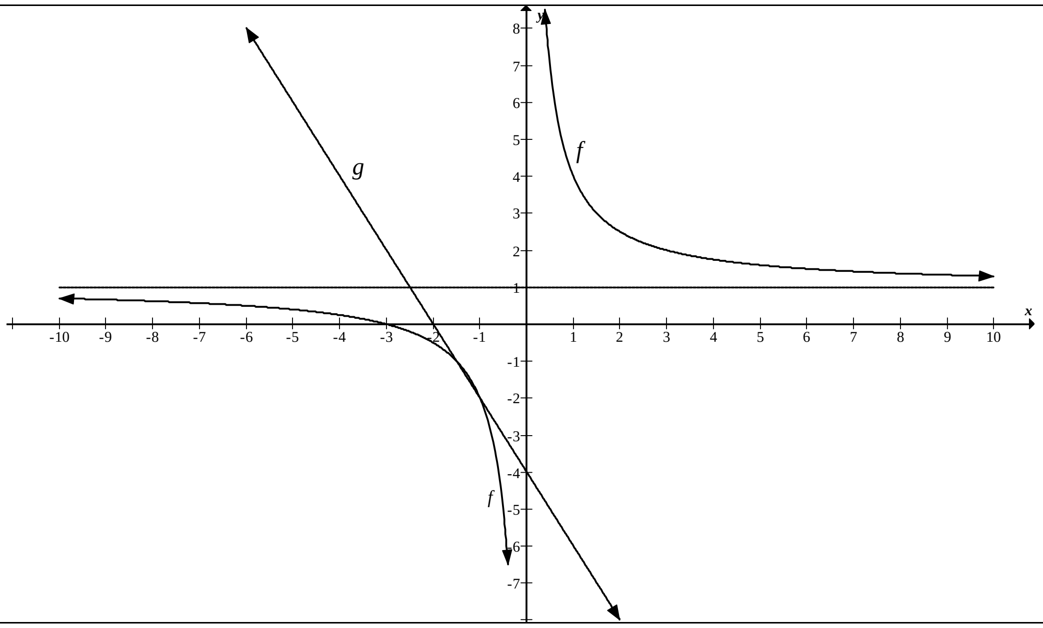
VRAAG 4

4.1	$A = P(1+i)^n$ $= 4500\left(1 + \frac{4.25}{100}\right)^{2.5}$ $= R\ 4993.47$	✓$n = 2.5$ ✓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	✓ $y = 0$ ✓5 399 ✓$n = 1{,}5$ ✓Substitusie ✓R 6 046.88 ✓ ÷ 18 ✓R335.94 (6)
4.2.2	R 6 046.88 - R 5 399 = R 647.88	✓ antwoord (1)
4.3	1kg = 1000g $\frac{1000}{28{,}35}$ = 35,27336861… onse 35,27336861… x 978,34 x 8,79 = R303 337.16	✓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 leerders is regshandig en speel nie sokker nie.	✓ antwoord (1)
5.3.2		✓ 15 ✓ 4 ✓ 2 ✓ 19 (4)
5.3.3 (a)	$\text{P(L OF S)} = \frac{14+4+3}{40}$ $= \frac{21}{40}$	✓ 15 + 4 + 2 ✓ 40 ✓ antwoord (3)
5.3.3 (b)	$\text{P(R EN S)} = \frac{14}{40}$ $= \frac{7}{20}$	✓ $\frac{15}{40}$ ✓ antwoord (2) **[13]**

VRAAG 6

6.1		✓ vorm van *f* ✓ *x*-afsnit van *f* ✓ *x*-afsnit van *g* ✓ *y*-afsnit van *g* (4)
6.2	$x = 0$ en $y = 1$	✓ antwoord ✓ antwoord (2)
6.3	$(-\infty ; 0) \cup (0 ; \infty)$	✓ waardes ✓ notasie (2)
6.4	$\frac{3}{x} + 1 = -2x - 4$ $\frac{3}{x} = -2x - 5$ $3 = -2x^2 - 5x$ $2x^2 + 5x + 3 = 0$ $(2x + 3)(x + 1) = 0$ $x = -\frac{3}{2}$ of $x = -1$	✓ $\frac{3}{x} + 1 = -2x - 4$ ✓ standaardvorm ✓ faktore ✓✓ antwoorde (5)
6.5	$-1 \leq -2x - 4 < 3$ $3 \leq -2x < 7$ $-1{,}5 \geq x > -3{,}5$ $-3{,}5 < x \leq -1{,}5$ OF $x \in (-3{,}5 ; -1{,}5]$	✓ $-1 \leq -2x - 4 < 3$ ✓ $3 \leq -2x < 7$ ✓ antwoord (3)
6.6	$k(x) = 2(-2x - 4)$ $= -4x - 8$ *y*-afsnit: (0 ; – 8)	✓ vergelyking van $k(x)$ ✓ antwoord (2)
6.7	*x*-afsnit: (2 ; 0) *y*-afsnit: (0 ; – 4)	✓ *x*-afsnit ✓ *y*-afsnit (2) **[20]**

VRAAG 7

7.1	C(– 2 ; 0)	✓ antwoord (1)
7.2	$f(x)=ax^2+q$ $f(x)=a\left(x^2-4\right)$ $2{,}5=a((-3)^2-4)$ $2{,}5=5a$ $a=\frac{1}{2}$ $f(x)=\frac{1}{2}\left(x^2-4\right)$	✓ $f(x)=a\left(x^2-16\right)$ ✓ 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

Kopiereg voorbehou