GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

PROVINCIAL EXAMINATION/ *PROVINSIALE EKSAMEN*

NOVEMBER 2021

GRADE 10/*GRAAD 10*

MARKING GUIDELINES/*NASIENRIGLYNE*

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

8 pages/*bladsye*

EXEMPLAR

NOTE:

- If a candidate answers a QUESTION TWICE, mark only the FIRST attempt.
- If a candidate crossed out an answer and did not redo it, mark the crossed-out answer.
- Consistent accuracy applies to ALL aspects of the marking guidelines.
- Assuming values/answers in order to solve a problem is unacceptable.
- No spaces between the QUESTIONS in the memo.

LET WEL:

- *As 'n kandidaat 'n vraag TWEE KEER beantwoord, sien slegs die EERSTE poging na.*
- *As 'n kandidaat 'n antwoord van 'n vraag doodtrek en nie oordoen nie, sien die doodgetrekte poging na.*
- *Volgehoue akkuraatheid word in ALLE aspekte van die nasienriglyne toegepas.*
- *Aannames van waardes/antwoorde om 'n probleem op te los, word NIE toegelaat nie.*
- *Geen spasies tussen die ANTWOORDE op die memorandum nie.*

QUESTION/*VRAAG* 1			
1.1.1	x^2+x-42 $=(x+7)(x-6)$	✓ $x+7$ ✓ $x-6$	(2)
1.1.2	$2ab^2-b^3+b^2-2ab$ $=2ab(b-1)-b^2(b-1)$ $=(b-1)(2ab-b^2)$ $=b(b-1)(2a-b)$ or/*of* $b^2(2a-b)+b(b-2a)$ $=b^2(2a-b)-b(2a-b)$ $=(2a-b)(b^2-b)$ $=b(2a-b)(b-1)$	✓✓ grouping/*groepeer* ✓ factorise/*faktoriseer* ✓ factorise/*faktoriseer*	(4)
1.1.3	$3-\frac{27}{x^2}$ $=3\left(1-\frac{9}{x^2}\right)$ $=3\left(1+\frac{3}{x}\right)\left(1-\frac{3}{x}\right)$	✓ 3 as a common factor/ *3 as gemeenskaplike faktor* ✓ factorise/*faktoriseer*	(2)
1.2.1	$8a^3+b^3$	✓ $8a^3$ ✓ $+b^3$	(2)
1.2.2	$\frac{1}{(2^3x^{12})^{\frac{1}{3}}}\times\frac{2}{x^4}-\frac{1}{x^8}$ $=\frac{1}{2x^4}\times\frac{2}{x^4}-\frac{1}{x^8}$ $=\frac{1}{x^8}-\frac{1}{x^8}$ $=0$ or/*of* $2^{-1}x^{-4}\times 2x^{-4}-x^{-8}$	✓ $\frac{1}{2x^4}$ ✓ $\frac{1}{x^8}$ ✓ 0	(3)

EXEMPLAR

1.2.3	$\frac{7^{2n+2}-3.7^{2n+1}}{49^n.4}$ $=\frac{7^{2n}(7^2-3.7)}{7^{2n}.4}$ $=\frac{28}{4}$ $=7$	✓ factorise numerator/ *faktoriseer teller* ✓ denominator 7^{2n} / *noemer* 7^{2n} ✓ 7	(3)
1.3	$6^2.5^3.4^4.3^5$ $=3^2 2^2.5^3.2^8.3^5$ $=3^7 2^7.2^3.5^3$ $=6^7.10^3$ $=1000x$	✓ break up each number/*breek elke getal op* ✓ $6^7 10^3$ ✓ 1 000x	(3)
			[19]

QUESTION/*VRAAG 2*			
2.1.1	$x=4$	✓ $x=4$	(1)
2.1.2	$\frac{x}{x-3}-\frac{x}{2-x}=\frac{2x^2-25}{x^2-5x+6}$ $\frac{x}{x-3}+\frac{x}{x-2}=\frac{2x^2-25}{(x-3)(x-2)}$ $x(x-2)+x(x-3)=2x^2-25$ $x^2-2x+x^2-3x=2x^2-25$ $-5x=-25$ $x=5$ Restrict/*Beperk* $x \neq 3,2$	✓ $+\frac{x}{(x-2)}$ ✓ $(x-3)(x-2)$ ✓ restrictions/*beperkings* ✓ $x(x-2)+x(x-3)=2x^2-25$ ✓ $x=5$	(5)
2.2.1	$0<3-\frac{x}{2}<2$ $-3<-\frac{x}{2}<-1$ $6>x>2$ $2<x<6$	✓ $-3<-\frac{x}{2}<-1$ ✓ $x>2$ ✓ $x<6$	(3)
2.2.2	Answer will vary, accept any integer NOT equal to 3, 4, 5 *Antwoorde kan verskil, aanvaar enige heelgetal NIE gelyk aan 3, 4, 5.*	✓	(1)

EXEMPLAR

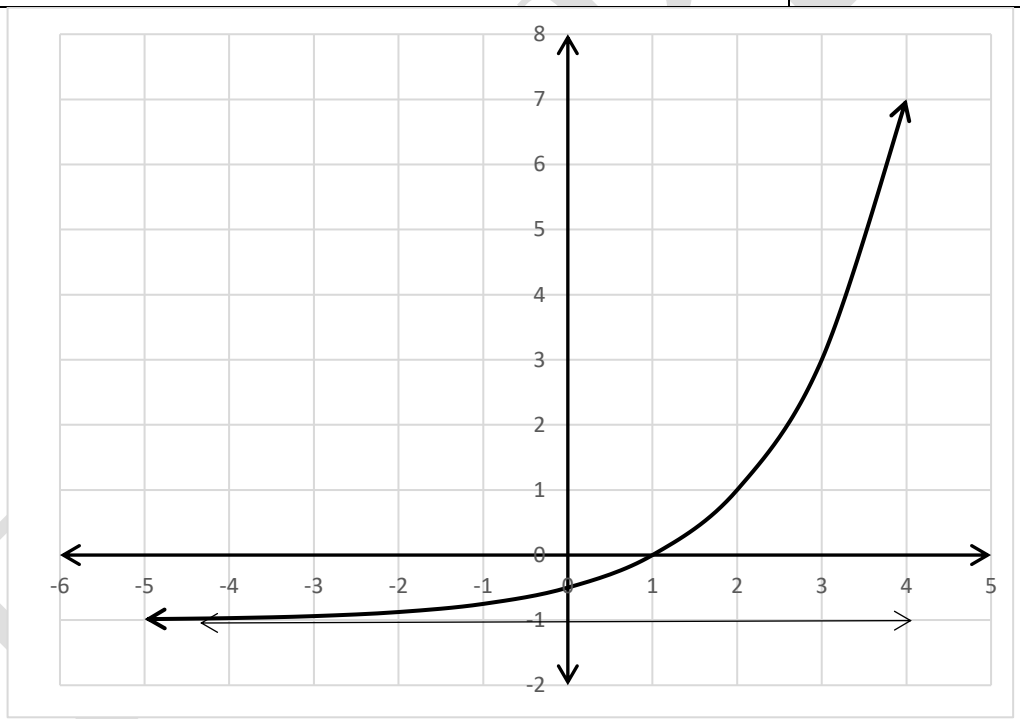
2.3	$2x-4y=6$ $\therefore x-2y=3$ $x=3+2y$ $3x-5y=10$ $3(3+2y)-5y=10$ $9+6y-5y=10$ $y=1$ $x=3+2(1)$ $x=5$	✓ $x-2y=3$ ✓ $x=3+2y$ ✓ substitution/*vervanging* ✓ $y=1$ ✓ $x=5$	(5)
			[15]

QUESTION/*VRAAG 3*			
3.1.1	$\frac{-12}{17}; \frac{-15}{21}$	✓ $\frac{-12}{17}$ ✓ $\frac{-15}{21}$	(2)
3.1.2	$T_n = \frac{-3n}{4n+1}$	✓✓ $-3n$ ✓✓ $4n+1$	(4)
3.1.3	$T_{50} = \frac{-3n}{4n+1}$ $= \frac{-3(50)}{4(50)+1}$ $= \frac{-150}{201}$	✓ substitution into formula/ *vervanging in formule* ✓ answer/*antwoord*	(2)
3.2.1	20	✓ answer/antwoord	(1)
3.2.2	$T_n = 3n + 5$	✓ 3n ✓ +5	(2)
3.2.3	$T_n = 3n + 5$ $125 = 3r + 5$ $3r = 120$ $r = 40$	✓ substitution into formula/ *vervanging in formule* ✓ answer/*antwoord*	(2)
3.3	$6x + 4 - (4x - 3) = 3x - 9 - (6x + 4)$ $6x + 4 - 4x + 3 = 3x - 9 - 6x - 4$ $2x + 7 = -3x - 13$ $5x = -20$ $x = -4$	✓ equation/*vergelyking* ✓ answer/*antwoord*	(2)
			[15]

EXEMPLAR

QUESTION/*VRAAG 4*			
4.1.1	$x \in \mathbb{R}; x \neq 0$	✓ $x \in \mathbb{R}; x \neq 0$	(1)
4.1.2	$[1;\infty)$ *or* $x \geq 1$	✓ correct brackets/ *korrekte hakies* ✓ values/*waardes*	(2)
4.2	$(2;0)$ $0 = \frac{b}{2} + 1$ $b = -2$	✓ substitute (2 ; 0)/ *vervang (2 ; 0)* ✓ $b = -2$	(2)
4.3	$f(-1) = \frac{-2}{-1} + 1$ $= 3$ $\therefore$ point of intersection is/snypunt$(-1;3)$ / and turning point/draaipunt $(0;1)$ $3 = a(-1)^2 + 1$ $3 = a + 1$ $a = 2$ $g(x) = 2x^2 + 1$	✓ $f(-1)$ ✓ substitute $(-1 ; 3)$/ *vervang* $(-1 ; 3)$ ✓ substitute *q/vervang q* ✓ equation/*vergelyking*	(4)
4.4	$y = -x + 1$	✓ $-x$ ✓ $+1$	(2)
4.5.1	$x < 0$ or $x\varepsilon(-\infty;0)$	✓ $x < 0$	(1)
4.5.2	$-1 < x < 0$ or/*of* $x\varepsilon(-1;0)$	✓ values/*waardes* ✓ inequality/brackets/ *ongelykheid/hakies*	(2)
4.6	$g(3) = 2(3)^2 + 1$ $g(3) = 19$ When/*Indien* $y = 19$	✓ substitute $x = 3$/ *vervang* $x = 3$ ✓ $y = 19$	(2)
4.7	$k(x) = -2x^2 + 2$	✓ $-2x^2$ ✓ $+2$	(2)
			[18]

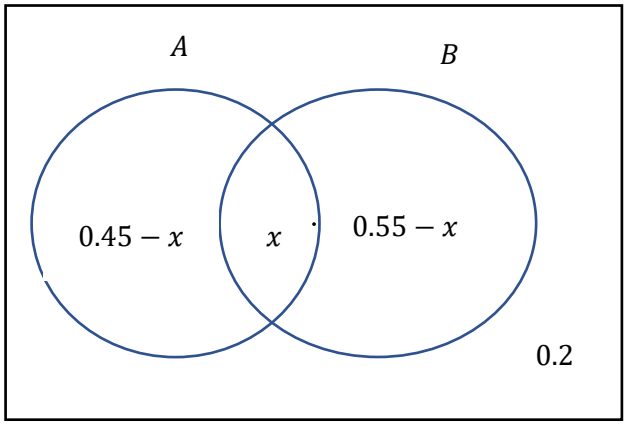
EXEMPLAR

QUESTION/*VRAAG 5*			
5.1	$y = -1$	✓ $y = -1$	(1)
5.2.1	let/*stel* $y = 0$ $\frac{1}{2}.2^x - 1 = 0$ $\frac{1}{2}.2^x = 1$ $2^x = 2$ $x = 1$	✓ substitute $y = 0$/ *vervang* $y = 0$ ✓ $x = 1$	(2)
5.2.2	let/*stel* $x = 0$ $y = \frac{1}{2}.2^0 - 1$ $y = -\frac{1}{2}$	✓ substitute $x = 0$/ *Vervang* $x = 0$ ✓ $y = -\frac{1}{2}$	(2)
5.3	 ✓ $x = \underline{1}$ x – intercepts/x – *afsnit* ✓ $y = -½$ y -intercept/y *-afsnit* ✓ $y = -1$ asymptote/*asimptote*		(3)
5.4	$y = -\frac{1}{2}.2^x - 1$	✓ $-\frac{1}{2}.2^x$ ✓ -1	(2)
			[10]

PLAR

QUESTION/*VRAAG 6*			
6.1	$2150 \times 3 \times 4 = 25\,800$ Rials/*Riyal* $25\,800 \times 4.012778$ $= R\,103\,529{,}67$	✓ total cost for family/ *totale koste vir die familie* ✓ $\times 4.012778$ ✓ answer/*antwoord*	(3)
6.2	$A = 50\,000(1 + 0.13 \times 3)$ $= R69\,500$ They will NOT cover the cost/*Hulle sal NIE die koste dek nie.*	✓ substitute/*vervang* ✓ answer/*antwoord* ✓ statement/*stelling*	(3)
6.3	They would like a strong rand because they will pay less for their tickets and accommodation. / *Hulle sal 'n sterk Rand verkies aangesien die kaartjie- en akkomoderingskoste minder sal kos.*	✓ strong rand/*sterk rand* ✓ motivation/*motivering*	(2)
6.4	$A = P(1+in)$ $2150 = P\left[1+(0.005)(4)\right]$ $2150 = P(1.02)$ $P = 2107{,}84$	✓ substitution/*vervanging* ✓ simplify/*vereenvoudig* ✓ answer/*antwoord*	(3)
			[11]

EXEMPLAR

QUESTION/*VRAAG 7*				
7.1.1			✓ $0.45 - x$ ✓ $0.55 - x$ ✓ x ✓ 0.2	(4)
7.1.2	(a)	$0.45 - x + x + 0.55 - x = 0.8$ $1 - x = 0.8$ $x = 0.2$	✓ equation/*vergelyking* ✓ answer/*antwoord*	(2)
7.1.2	(b)	$P(A \text{ or/}of \text{ (not/}nie\ (B))$ $= 0.25 + 0.2 + 0.2$ $= 0.65$	✓ equation/*vergelyking* ✓ answer/*antwoord*	(2)
7.2	$P(A \cup B) = P(A) + P(B) - P(A \cap B)$ $\frac{68}{80} = \frac{30}{80} + \frac{45}{80} - \frac{P(A \cap B)}{80}$ $\therefore\ P(A \cap B) = 30 + 45 - 68$ = 7		✓ correct formula/ *korrekte formule* ✓ substitution into formula/ *vervanging in formule* ✓ simplification/ *vereenvoudiging* ✓ answer/*antwoord*	(4)
				[12]
			TOTAL/*TOTAAL*	**100**

EXEMPLAR