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GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

PROVINCIAL EXAMINATION/

PROVINSIALE EKSAMEN

JUNE/*JUNIE* 2022

GRADE/*GRAAD* 10

MARKING GUIDELINES/*NASIENRIGLYNE*

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

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5 pages/*bladsye*

NOTE/LET WEL

- If a candidate answers a question TWICE, mark only the FIRST attempt./*As 'n kandidaat 'n vraag TWEE KEER beantwoord het, merk slegs die EERSTE poging.*
- If a candidate crossed out an answer and did not redo it, mark the crossed-out answer./*As 'n kandidaat 'n antwoord deurgehaal het en dit nie oorgedoen het nie, merk die deurgehaalde antwoord.*
- Consistent accuracy applies to ALL aspects of the marking guidelines./*Konsekwente akkuraatheid is van toepassing op ALLE aspekte van die nasienriglyne.*
- Assuming values/answers in order to solve a problem is unacceptable./*Om waardes/antwoorde te aanvaar om 'n probleem op te los, is onaanvaarbaar.*

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QUESTION/*VRAAG* 1				
Q./*VR.*	**Suggested solution/*voorgestelde oplossing***		**Explanation/ *Verduideliking***	**Marks/ *Punte***
1.1	$x = 1$		✓ 1	(1)
1.2	1.2.1	$2x^2 - 32$ $= 2(x^2 - 16)$ $= 2(x+4)(x-4)$	✓ factorise/*faktoriseer* ✓ factorise/*faktoriseer*	(2)
	1.2.2	$6a^2 - b + a(2 - 3b)$ $= 6a^2 - b + 2a - 3ab$ $= 2a(3a+1) - b(3a+1)$ **OR/*OF*** $= (3a+1)(2a-b)$ $= 3a(2a-b) + (2a-b)$ $= (2a-b)(3a+1)$	✓ simplify/*vereenvoudig* ✓ grouping/*groepering* ✓ factorise/*faktoriseer*	(3)
1.3	1.3.1	$(x-1)(x^2+x+1)$ $= x^3 - 1$ If they multiply everything out and answer is incorrect then no marks. *As hulle alles vermenigvuldig en antwoord is verkeerd, dan geen punte nie.*	✓ x^3 ✓ -1	(2)
	1.3.2	$\frac{x+7}{x^2-x-6} - \frac{3}{x-3} + \frac{2}{2x+4}$ $= \frac{x+7}{(x-3)(x+2)} - \frac{3}{x-3} + \frac{2}{2(x+2)}$ $= \frac{x+7}{(x-3)(x+2)} - \frac{3}{x-3} + \frac{1}{x+2}$ $= \frac{x+7-3(x+2)+x-3}{(x-3)(x+2)}$ $= \frac{x+7-3x-6+x-3}{(x-3)(x+2)}$ $= \frac{-x-2}{(x-3)(x+2)}$ $= \frac{-(x+2)}{(x-3)(x+2)}$ $= \frac{-1}{x-3}$	✓ factorise trinomial and/ *faktoriseer drieterm en* $2x + 4$ ✓ common denominator *gemeenskaplike noemer* ✓ numerator/*teller* ✓ simplify numerator/ *vereenvoudig die teller* ✓ factorise and simplify *faktoriseer en vereenvoudig*	(5)

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	1.3.3	$\frac{4^{x+1}.9^{x}}{6^{2x-1}}$ $=\frac{2^{2(x+1)}.3^{2x}}{(3.2)^{2x-1}}$ $=\frac{2^{2x+2}.3^{2x}}{3^{2x-1}.2^{2x-1}}$ $=2^{3}.3$ $=24$	✓ numerator/*teller* ✓ denominator/*noemer* ✓ answer/*antwoord*	(3)
1.4	$-2^{x}, 2^{-x}, 2^{x^{0}}, 2^{x}, 2^{x^{2}}$		✓ ✓ all correct/*alles reg* ✓ one error/*een fout*	(2)
				[18]

QUESTION/*VRAAG* 2				
Q./*VR.*	**Suggested solution/*Voorgestelde oplossing***		**Explanation/ *Verduideliking***	**Marks/ *Punte***
2.1	2.1.1	$\sqrt{ax}=b$ $ax=b^{2}$ $x=\frac{b^{2}}{a}$; $a\neq 0$	✓ square/*vierkant* ✓ divide/*deel*	(2)
	2.1.2	$3^{x}+3^{x-1}=36$ $3^{x}(1+3^{-1})=36$ $3^{x}\left(\frac{4}{3}\right)=36$ $3^{x}=27$ $3^{x}=3^{3}$ $x=3$	✓ factorise/*faktoriseer* ✓ simplify isolate/ *vereenvoudig isoleer* 3^{x} ✓ answer/*antwoord*	(3)
2.2	2.2.1	$\frac{x}{3}>\frac{x}{2}+1$ $2x>3x+6$ $-x>6$ $x<-6$	✓ LCD/*KGV* ✓ answer/*antwoord*	(2)
	2.2.2	$x=-10$	✓ answer/*antwoord*	(1)

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2.3	$2x+y=4$ and/*en* $3x-y=11$ $y=4-2x$ $3x-(4-2x)=11$ $3x-4+2x=11$ $5x=15$ $x=3$ $y=4-2(3)$ $y=-2$ **ALTERNATIVE/*ALTERNATIEF*** $Eq_1 + Eq_2$ $5x = 15$ $x = 3$ $y = -2$	**OR/*OF*** $2x+y=4$ $3x-y=11$ $5x \quad =15$ $x=3$ $y=-2$	✓ equation/*vergelyking 1* ✓ subs./*vervang* ✓ x value/*x-waarde* ✓ y value/*y-waarde* Adding the two equations: *Optel van 2 vergelykings:* ✓ $5x$ ✓ 15 ✓ x value/*x-waarde* ✓ y value/*y-waarde*
			[12]

QUESTION/*VRAAG* 3			
Q./*VR.*	**Suggested solution/*Voorgestelde oplossing***	**Explanation/*Verduideliking***	**Marks/*Punte***
3.1	**3; 5; 7; 9; 11**	9 ✓ 11 ✓	(2)
3.2	$2n + 1$	✓ ✓ correct answer/*korrekte antwoord*	(2)
3.3	$4(131) + 1$ $524 + 1$ 525	✓ substitute/*vervang* 131 ✓ 525	(2)
			[6]

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QUESTION/*VRAAG* 4			
Q.VR.	**Suggested solution/*Voorgestelde oplossing***	**Explanation/*Verduideliking***	**Marks/*Punte***
4.1	B(0;4) D(0;2) Answers must be in coordinate form (see question)./ *Antwoorde moet in koördinaatvorm wees (sien*	✓ B(0;4) ✓ D(0;2)	(2)
4.2	$y \leq 4$ **OR/*OF*** $y \epsilon (-\infty; 4]$	✓	(1)
4.3	$-x^2 + 4 = 0$ $(2 - x)(2 + x) = 0$ $x = 2 \quad x = -2$ AE = 2 – (-2) AE = 4	✓ equation/vergelyking = 0 ✓ factors/*faktore* ✓ Both values of *x*/*albei waardes van x* ✓ Answer/*Antwoord*	(4)
4.4	Using values for A/*Gebruik waardes vir A* $0 = m(-2) + 2$ $2m = 2$ $m = 1$	✓ sub./*vervang* ✓ $m = 1$	(2)
4.5	$f(x) = g(x)$ $-x^2 + 4 = x + 2$ $x^2 + x - 2 = 0$ $(x + 2)(x - 1)$ $x = -2 \qquad x = +1$ **A(-2;0)** Sub/*vervang* $x = 1$ into/*in* $g(x)$ $y = 1(1) + 2$ $y = 3$ **C(1;3)**	✓ $f(x) = g(x)$ ✓ Correct x values/*Korrekte x-waardes* ✓ C(1;3)	(3)
4.6	Using the reflection of the points of intersection in Q.4.5/*Gebruik die reflekse van die snypunte in Vr. 4.5.* $-1 \leq x \leq 2$	CA from 4.5/CA van 4.5 ✓ correct *x* values/*korrekte x-waardes* ✓ inequality/*ongelykheid*	(2)
			[14]

TOTAL/*TOTAAL*: 50

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