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GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

# PROVINCIAL EXAMINATION

# *PROVINSIALE EKSAMEN*

# NOVEMBER 2022

# GRADE 10/*GRAAD 10*

# MARKING GUIDELINES/

# *NASIENRIGLYNE*

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

**9 pages/*bladsye***

**NOTE/*LET WEL:***

- If a candidate answered 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.

- *As 'n kandidaat 'n VRAAG TWEE KEER beantwoord het, merk slegs die EERSTE poging.*
- *As 'n kandidaat 'n antwoord deurgehaal het en dit nie oorgedoen het nie, merk die deurgehaalde antwoord.*
- *Konsekwente akkuraatheid is van toepassing op ALLE aspekte van die nasienriglyne.*
- *Om waardes/antwoorde te aanvaar om 'n probleem op te los is onaanvaarbaar.*

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| QUESTION/*VRAAG* 1 | | | | |
|---|---|---|---|---|
| | | | | |
| 1.1 | 1.1.1 | $2x^6-8$<br>$=2(x^6-4)$<br>$=2\left(x^3+2\right)\left(x^3-2\right)$ | ✓ factorise/*faktoriseer*<br>✓ factorise/*faktoriseer* | (2) |
| | | | | |
| | 1.1.2 | $-x+(x-y)^3+y$<br>$=(x-y)^3-(x-y)$<br>$=(x-y)[(x-y)^2-1]$<br>$=(x-y)(x-y+1)(x-y-1)$ | ✓ $-(x-y)$<br>✓ commonfactor $(x-y)$ *gemeenskaplike faktor* $(x-y)$<br>✓ $[(x-y)^2-1]$<br>✓ diff. of two squares/ *verskil tussen twee vierkante* | (4) |
| | | | | |
| 1.2 | 1.2.1 | $\left(x^{\frac{1}{2}}-3\right)^2$<br>$=x^{\frac{1}{4}}-6x^{\frac{1}{2}}+9$ | ✓ $x^{\frac{1}{4}}$ and/*en* 9<br>✓ $-6x^{\frac{1}{2}}$ | (2) |
| | | | | |
| | 1.2.2 | $x^{-3}\div x^{-5}+(x^{-2})^{-1}$<br>$=x^{-3-(-5)}+x^2$<br>$=x^2+x^2$<br>$=2x^2$ | ✓ division $x^{-3+5}$ and brackets/ *deel* $x^{-3+5}$ *en hakies*<br>✓ simplify/*vereenvoudig* | (2) |
| | | | | |
| | 1.2.3 | $\frac{5^{x+1}.(4^x)^3}{2^{5x-2}.10^{x-1}}$<br>$=\frac{5^{x+1}.(2^{2x})^3}{2^{5x-2}.(5.2)^{x-1}}$<br>$=\frac{5^{x+1}.2^{6x}}{2^{5x-2}.5^{x-1}.2^{x-1}}$<br>$=5^{x+1-x+1}.2^{6x-5x+2-x+1}$<br>$=5^2.2^3$<br>$=200$ | ✓ basesprimefactors/ *basisseprimfaktore*<br>✓ simplify numerator/ *vereenvoudig teller*<br>✓ simplify denominator/ *vereenvoudig noemer*<br>✓ final answer/ *finale antwoord* | (4) |

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| | | | | |
|---|---|---|---|---|
| | 1.2.4 | $\frac{-11}{2x^2-5x-12}-\frac{1}{4-x}$<br>$=\frac{-11}{(2x+3)(x-4)}+\frac{1}{x-4}$<br>$=\frac{-11+2x+3}{(2x+3)(x-4)}$<br>$=\frac{2x-8}{(2x+3)(x-4)}$<br>$=\frac{2(x-4)}{(2x+3)(x-4)}$<br>$=\frac{2}{2x+3}$ | ✓ Factorisetrinomial/ *Faktoriseer drieterm*<br>✓ Changeof sign/ *Verandering van teken*<br>✓ Numerator/*Teller*<br>✓ LCD/KGV<br>✓ Simplified answer/ *Vereenvoudigde antwoord* | (5) |
| | | | | |
| 1.3 | | $(3x+2)(2x-5)$<br>$=6x^2-11x-10$<br>$\therefore d=-11$ | ✓ $(2x-5)$<br>✓ Simplify/*Vereenvoudig*<br>✓ Answer/*Antwoord* | (3) |
| | | | | **[22]** |
| | | | | |
| **QUESTION/*VRAAG* 2** | | | | |
| | | | | |
| 2.1 | 2.1.1 | $(3x-1)(x+2)=0$<br>$x=\frac{1}{3}$ or/*of* $x=-2$ | ✓ $\frac{1}{3}$<br>✓ –2 | (2) |
| | | | | |
| | 2.1.2 | $3^x-2.3^{x-1}=3$<br>$3^x(1-2.3^{-1})=3$<br>$3^x\left(\frac{1}{3}\right)=3$<br>$3^x=3^2$<br>$x=2$ | If answer ONLY NO marks/ *SLEGS antwoord GEEN punte nie*<br>✓ Factorise/*Factorise*<br>✓ Simplify/*Vereenvoudig*<br>✓ Answer/*Antwoord* | (3) |
| | | | | |
| 2.2 | 2.2.1 | $-1\le 1-\frac{2x}{3}<5$<br>$-2\le -\frac{2x}{3}<4$<br>$-6\le -2x<12$<br>$3\ge x>-6$<br>$-6<x\le 3$ | ✓ Subtract 1 on both sides/ *Trek 1 aan albei kante af*<br>✓ ×3<br>✓ ÷(−2) and change of inequalities/*en verandering van ongelykhede* | (3) |
| | | | | |
| | 2.2.2 | 9 integers satisfy the equation/*9 heelgetalle voldoen aan die vergelyking* | ✓ Answer/*Antwoord* | (1) |

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| | | | |
|---|---|---|---|
| 2.3 | Solve for $x$ and $y$ simultaneously/*Los vir x en y gelyktydig op*:<br><br>$x - y = 4$ and/*en* $\frac{x}{5} + \frac{y}{2} = 5$<br>$x = y + 4$……(1) $2x + 5y = 50$……..(2)<br>subst/*vervang* (1) into/*in* (2)<br>$2(y + 4) + 5y = 50$<br>$2y + 8 + 5y = 50$<br>$7y = 42$<br>$y = 6$<br><br>$x = 6$<br>$x = 10$<br><br>**OR/*OF***<br><br>$y = x - 4$……(1)<br>subst/*vervang* (1) into/*in* (2)<br>$2x + 5(x - 4) = 50$<br>$2x + 5x - 20 = 50$<br>$7x = 70$<br>$x = 10$<br><br>$y = 10 - 4$<br>$y = 6$ | ✓ Make $x$ the subject of the equation (1)/*Maak x die onderwerp van die vergelyking (1)*<br>✓ LCD/*KGV*<br>✓ Substitute/*Vervang*<br>✓ $y$ value/*y-waarde*<br>✓ $x$ value/*x-waarde*<br>✓ Make $y$ the subject of the equation (1)/*Maak y die onderwerp van die vergelyking (1)*<br>✓ Substitute/*Vervang*<br>✓ Simplify/*Vereenvoudig*<br>✓ $x$ value/*x-waarde*<br>✓ $y$ value/*y-waarde* | (5) |
| | | | **[14]** |

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| QUESTION/*VRAAG* 3 | | | | |
|---|---|---|---|---|
| | | | | |
| 3.1 | 3.1.1 | Zain's formula/*Zain se formule*: $T_n = 4(n-1)+2$<br>$= 4n-4+2$<br>$= 4n-2$<br>This is the same as Letti's formula. They are both correct./<br>*Dit is dieselfde as Lettie se formule. Hulle is albei korrek.* | ✓ Method/*Metode*<br>✓ Answer/*Antwoord*<br>✓ Reason/*Rede* | (3) |
| | | | | |
| | 3.1.2 | $T_{27} = 4(27) - 2$ ✓<br>$= 106$ ✓ | ✓ Substitution/ *Vervanging*<br>✓ Answer/*Antwoord* | (2) |
| | | | | |
| 3.2 | 3.2.1 | $T_n = 5n - 8$ ✓ ✓ | ✓ 5n<br>✓ – 8 | (2) |
| | | | | |
| | 3.2.2 | The 52th number to end in a 7 will be $T_{105}$/*Die 52ste getal wat op 'n 7 ending sal* $T_{105}$ *wees.*<br>$T_{105} = 5(105) - 8$<br>$= 517$<br>**OR/*OF***<br>7 ; 17 ; 27 ; 37<br>$T_n = 10n - 3$<br>$T_{52} = 10(52) - 3$<br>$= 517$<br>**OR/*OF***<br>7 ; 17 ; 27 ; 37<br>By inspection the 52nd term will be 517<br>*Deur inspeksie is die 52ste term gelyk aan* 517 | ✓ n=105<br>✓ Substitute/*Vervang*<br>✓ 517<br>✓ Tn<br>✓ Substitute/*Vervang*<br>✓ 517<br>✓ Pattern/*Patroon*<br>✓ ✓ 517 | (3) |
| | | | | **[10]** |

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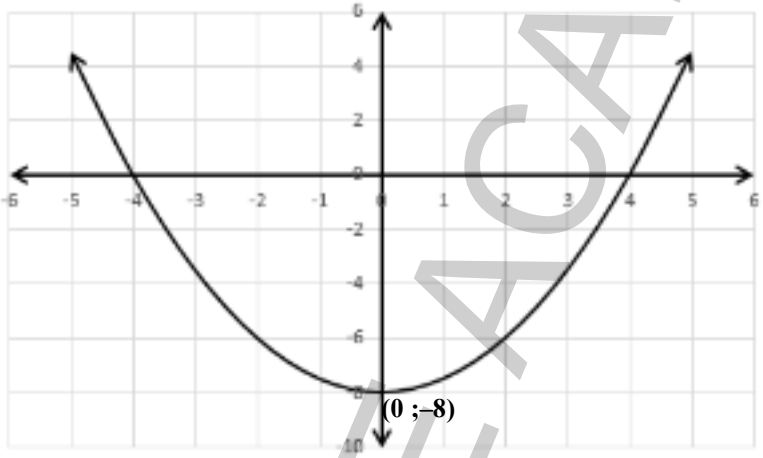
| QUESTION/*VRAAG* 4 | | | | |
|---|---|---|---|---|
| | | | | |
| 4.1 | 4.1.1 | $x \in R$ | ✓ Answer/*Antwoord* | (1) |
| | | | | |
| | 4.1.2 | $y > -4$ **OR/*OF*** $y \in (-4;\infty)$ | ✓ Answer/*Antwoord* | (1) |
| | | | | |
| | 4.1.3 | $y = -3$ | ✓ Answer/*Antwoord* | (1) |
| | | | | |
| 4.2 | $f(x) = a^x - 3$<br>subst/*vervang* $(-2;6)$<br>$6 = a^{-2} - 3$<br>$a^{-2} = 9$<br>$a^{-2} = \frac{1}{9}$<br>$a = \frac{1}{3} = 3^{-1}$ | | ✓ Substitution/*Vervanging*<br><br><br><br><br>✓ $\frac{1}{3} = 3^{-1}$ | (2) |
| | | | | |
| 4.3 | $x$-intercept exponential graph:/*x-afsnit eksponensiële grafiek*:<br>$3^{-x} - 3 = 0$<br>$3^{-x} = 3$<br>$x = -1$<br>∴ **C(− 1 ; 0)** **OR/*OF***<br>$x$-intercept hyperbola:/*x-afsnit hiperbool*:<br>$\frac{-4}{x} - 4 = 0$<br>$\frac{-4}{x} = \frac{4}{1}$ ∴ **C(− 1 ; 0)**<br>$x = -1$ | | ✓ Let/*Stel* $x = 0$<br><br><br>✓ $x$ value/*x-waarde*<br><br>✓ co-ordinate/*koördinaat* | (3) |
| | | | | |
| 4.4 | $-1 < x < 0$ **OR/*OF*** $x \in (-1;0)$ | | ✓ $x > -1$<br>✓ $x < 0$ | (2) |
| | | | | |
| 4.5 | 4.5.1 | A(–2 ; 6) C(–1 ; 0)<br>$m = \frac{6-0}{-2+1}$<br>$m = -6$<br>$y = -6x + c$<br>subst/*vervang* $(-1;0)$ **OR/*OF*** subst/*vervang* $(-2;6)$<br>$0 = -6(-1) + c$ $6 = -6(-2) + c$<br><br>$c = -6$<br>∴ $y = -6x - 6$ | ✓ subst*into* $m = \frac{y_2 - y_1}{x_2 - x_1}$<br>*vervang in* $m = \frac{y_2 - y_1}{x_2 - x_1}$<br>✓ $m = -6$<br>✓ subst $m$ and co-ordinate/<br>*vervang m en koördinaat*<br>✓ equation/*vergelyking* | (4) |
| | | | | |
| | 4.5.2 | $y = -x - 4$ | ✓ $-x$<br>✓ $-4$ | (2) |



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| | | | |
|---|---|---|---|
| 4.6 | $g(x) = -\frac{4}{x} - 4$ and/*en* B($x$ ; 6)<br>$-\frac{4}{x} - 4 = 6$<br>$-\frac{4}{x} = 10$<br>$x = -0,4$<br>AB = 2 − 0,4<br>= 1,6 units/*eenhede* | ✓ Subst $y$ = 6/*Vervang* $y$ = 6<br>✓ $x$ value/ *x-waarde*<br>✓ 1,6 | (3) |
| | | | **[19]** |
| **QUESTION/*VRAAG* 5** | | | |
| 5.1 |  | ✓ Shape/*Vorm*<br>✓ $x$ intercepts/ *x-afsnitte*<br>✓ Turning point/ *Draaipunt* | (3) |
| 5.2 | $q = -8$<br>Substitute (–4;0) or (4;0) to calculate $a$<br>*Vervang (–4;0) of (4;0) om a te bereken*<br>$y = ax^2 - 8$<br>$0 = a(4)^2 - 8$<br>$16a = 8$<br>$a = \frac{1}{2}$<br>$\therefore y = \frac{1}{2}x^2 - 8$ | ✓ Subst coordinate and $q$ = –8/ *Vervang koördinaat en q* = –8<br>✓ $\frac{1}{2}a =$<br>✓ Equation/ *Vergelyking* | (3) |
| 5.3 | $-4 \le x \le 4$ **OR/*OF*** $x \in [-4;4]$ | ✓ $x \ge -4$<br>✓ $x \le 4$ | (2) |
| 5.4 | $k(x) = -\frac{1}{2}x^2 + 2$ | ✓ $-\frac{1}{2}x^2$<br>✓ +2 | (2) |
| | | | **[10]** |

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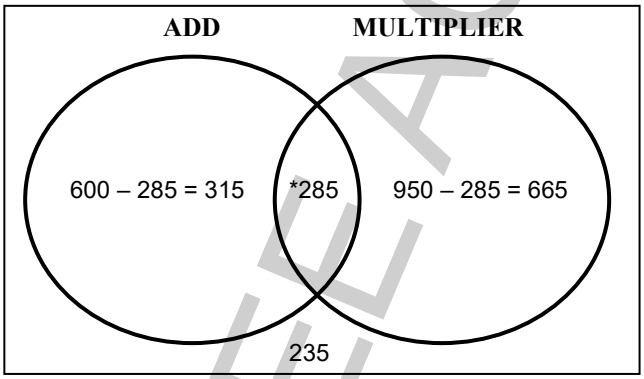
| QUESTION/*VRAAG* 6 | | | |
|---|---|---|---|
| | | | |
| 6.1 | A = (1 + *in*)<br>= 7 990(1 + (0,15 × 4)) ✓ ✓<br><br><br><br><br><br>= 7 990(1,60)<br>= R12 784,00✓<br><br><br><br>= R12 784,00 ÷ 48<br>= R 266,33 ✓<br><br>Monthly payment including fees/*Maandelikse betalings insluitend fooie* = R266,33 + R13,50<br>= R 279,83 ✓ | ✓ Substitution in correct formula/*Vervanging in korrekte formule*<br>✓ Converting 48 months to 4 years/ *Omskakeling 48 maande tot 4 jaar*<br><br>✓ Total amount including interest/ *Totale bedrag insluitend rente*<br>✓ Monthly repayment/ *Maandelikse terugbetaling*<br><br>✓ Total monthly repayment/ *Totale maandeliks terugbetaling* | (5) |
| | | | |
| 6.2 | A= P(1+ *i*)$^n$ ✓<br><br>= 5000(1 + 0,2)$^{31}$ ✓ ✓ ✓<br><br><br><br>= R 1 424 257,88 ✓ | ✓ Correct formula/ *Korrekte formule*<br>✓ 20% to/*na* 0,2<br>✓ 60 – 29, n=31<br>✓ Substitution/ *Vervanging*<br>✓ Answer/*Antwoord* | (5) |
| | | | **[10]** |

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**QUESTION/*VRAAG 7***

| | | | | |
|---|---|---|---|---|
| 7.1 | 7.1.1 | P(A or/*of* B) = 1 – P(A or/*of* B)′<br>= 1 – 0,05<br>= 0,95 | ✓ 1 – P(A or/*of* B)′<br>✓ Answer/*Antwoord* | (2) |
| | 7.1.2 | NO/NEE<br>P(A) + P(B) ≠ P(A or/*of* B) | ✓ no/*nee*<br>✓ Justification/ *Regverdiging* | (2) |
| | 7.1.3 | P(A or/*of* B) = P(A) + P(B) – P(A and/*en* B)<br>P(A and/*en* B) = 0,25 + 0,89 – 0,95<br>= 0,19 | ✓ Formula/*formule*<br>✓ Answer/*Antwoord* | (2) |
| | 7.1.4 | P(B) = 0,89 – 0,19<br>= 0,6 | ✓ 0,89 – 0,19<br>✓ Answer/*Antwoord* | (2) |
| 7.2 | 7.2.1 | <br>600 + 950 + 235 – 1 500 = 285 | ✓ 600 – 285 = 315(ADD)<br>✓ 950 – 285 = 665 (MULTIPLIER)<br>✓ 600 + 950 + 235 – 1 500 = 285<br>✓ Correct diagram used/ *Korrekte diagram gebruik* | (4) |
| | 7.2.2 | $\frac{285}{1\,500} = \frac{19}{100}$ | ✓ Answer only/ *Slegs antwoord* | (1) |
| | 7.2.3 | $\frac{1\,500-950}{1\,500} = \frac{550}{1\,500}$<br>$= \frac{11}{30}$<br>**OR/*OF***<br>$\frac{315\ +\ 235}{1\,500} = \frac{550}{1\,500} = \frac{11}{30}$ | ✓ $\frac{1\,500-950}{1\,500}$<br>✓ $\frac{11}{30}$<br>**OR/*OF***<br>$\frac{315\ +\ 235}{1\,500}$ | (2) |
| | | | | **[15]** |
| | | | | **TOTAL/*TOTAAL* : 100** |

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