



EXAMINATIONS AND ASSESSMENT

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ERRATA

**TO: PRINCIPALS OF SCHOOLS IN THE FET BAND
DISTRICTS HEADS OF EXAMINATIONS**

**FROM: MS N. MBELEKI
CES: ASSESSMENT INSTRUMENTS DEVELOPMENT AND QUESTION
PAPERS BANK MANAGEMENT**

DATE: 22 SEPTEMBER 2020

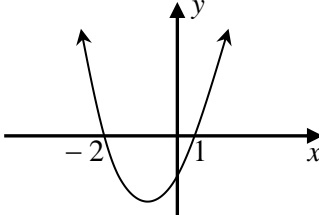
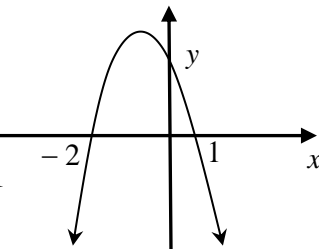
SUBJECT: MATHEMATICS P1 GRADE 12 SEPTEMBER ERRATA

The Mathematics P1 Grade 12 for the Preparatory September Examination 2020 was written on Friday, 18 September 2020. We were made aware of certain errors that were discovered during the writing and marking process.

The following amended guidelines with regard to marking was prepared in conjunction with the examiner and moderator. In order to address this and to ensure that learners are not disadvantaged, the following standardised approach to marking must be adopted across the Province.

ERRATA

QUESTION 1/VRAAG 1

<p>1.1.3</p>	<p> $-x^2 - x + 2 \leq 0$ $x^2 + x - 2 \geq 0$ $(x+2)(x-1) \geq 0$ $\therefore x \leq -2$ or/of $x \geq 1$ </p>  <p> (If Learner treats inequality as and equal sign, i.e. $\therefore x \geq -2$ or/of $x \geq 1$) Max. (2/4) Solution as a whole is incorrect </p> <p>OR/OF</p> <p> $-x^2 - x + 2 \leq 0$ $(1-x)(x+2) \leq 0$ $\therefore x \leq -2$ or/of $x \geq 1$ </p> 	<p> $\checkmark x^2 + x - 2 \geq 0$ \checkmark factorisation / faktorisering $\checkmark\checkmark x \leq -2$ or/of $x \geq 1$ (ACCURACY AS COMBO – NOT MARKED IN PARTS) </p> <p>(4)</p> <p>OR/OF</p> <p> $\checkmark 1 - x$ \checkmark factorisation / faktorisering $\checkmark\checkmark x \leq -2$ or/of $\checkmark x \geq 1$ </p> <p>(4)</p>
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1.3

<p>CORRECTION</p>	<p> $(x+m)(x+n) = 3p^2$ $x^2 + nx + mx + mn - 3p^2 = 0$ $x^2 + (m+n)x + (mn - 3p^2) = 0$ </p> <p>For real roots / <i>Vir reële wortels:</i></p> <p>$b^2 - 4ac \geq 0$</p> <p> $\Delta = b^2 - 4ac$ $= (m+n)^2 - 4(1)(mn - 3p^2)$ $= m^2 + 2mn + n^2 - 4mn + 12p^2$ $= m^2 - 2mn + n^2 + 12p^2$ $= (m-n)^2 + 12p^2$ </p> <p>But/Maar: $(m-n)^2 \geq 0$ and/en $12p^2 \geq 0$</p> <p>$\therefore \Delta \geq 0 \Rightarrow$ roots are real / wortels is reël</p>	<p> $\checkmark x^2 + (m+n)x + (mn - 3p^2) = 0$ </p> <p> $\checkmark (m+n)^2 - 4(1)(mn - 3p^2)$ </p> <p> $\checkmark (m-n)^2 + 12p^2$ </p> <p> \checkmark explanation / verduideliking conclusion / gevolgtrekking </p> <p>(4)</p>
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QUESTION 2/VRAAG 2

2.1.4	$P_n = T_n + k = -n^2 + 36n + (51 + k)$	✓ ✓ answer / antwoord (ANSWER ONLY – FULL MARKS) (2)
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QUESTION 3/VRAAG 3

3.1	$1 + 4 + 4^2 + 4^3 + \dots + 4^{n-1}$ $\therefore T_n = 4^{n-1}$ $\therefore \text{Sum/Som: } \sum_{n=1}^7 4^{n-1} \text{ OR/OF } \sum_{n=0}^6 4^n$ <p>For original sequence: /Vir oorspronklike ry:</p> $\text{Sum/Som: } \sum_{n=1}^{5000} n$ $S_n : \sum_{n=1}^{5000} n - \sum_{n=1}^7 4^{n-1} \text{ OR/OF } \sum_{n=1}^{5000} n - \sum_{n=0}^6 4^n$	✓ $T_n = 4^{n-1}$ ✓ $\sum_{n=1}^7 4^{n-1} \text{ OR/OF } \sum_{n=0}^6 4^n$ ✓ $\sum_{n=1}^{5000} n$ ✓ answer / antwoord (4)
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3.2 ALTERNATIVE SOLUTION

<p>Add the two series and get a new series: / Tel die twee reeks bymekaar en kry 'n nuwe reeks:</p> $2 + 2x^2 + 2x^4 + \dots$ <p>$a = 2$ and / en $r = x^2$</p> $\therefore \frac{2}{1-x^2} = 8$ $8 - 8x^2 = 2$ $-8x^2 = -6$ $x^2 = \frac{3}{4}$ $x = \pm \frac{\sqrt{3}}{2}$	✓ ✓ for correct new series vir korrekte nuwe reeks ✓ $\frac{2}{1-x^2}$ ✓ equating sum to 8 stel som gelyk aan 8 ✓ $x^2 = \frac{3}{4}$ ✓ answer / antwoord (6)
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QUESTION 5/VRAAG 5

ALTERNATIVE SOLUTION 5.3	$g(x) = b^x - 8$ $-5 = b^1 - 8$ $\therefore b = 3$ $f(x) = ax^2 + 3x + c$ $f'(x) = 2ax + 3$ $2ax + 3 = 0 \text{ (at turning point)}$ $2a\left(-\frac{3}{4}\right) + 3 = 0$ $-\frac{3}{2}a = -3$ $a = 2$ $\therefore -5 = 2(1)^2 + 3(1) + c$ $c = -10$	<p>✓ substituting (1 ; -5) / vervangings van (1; -5)</p> <p>✓ $b = 3$</p> <p>✓ $2ax + 3 = 0$</p> <p>✓ $2a\left(-\frac{3}{4}\right) + 3 = 0$</p> <p>✓ simplifying / vereenvoudiging</p> <p>✓ $f(1) = -5$</p> <p style="text-align: right;">(6)</p>
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5.6	$y = 3^x \text{ or / of } y = b^x$ $y = \log_3 x \text{ or } y = \log_b x$	<p>✓ finding $h(x)$ / bepaling van $h(x)$</p> <p>✓ answer / antwoord</p> <p style="text-align: center;">Answer ONLY – Full Marks</p> <p style="text-align: right;">(2)</p>
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QUESTION 6/VRAAG 6

6.1	$A = P(1 - i)^n$ $\frac{1}{3}x = x(1 - i)^4$ $\frac{1}{3} = (1 - i)^4$ $3^{\frac{1}{4}} - 1 = -i$ $-0,2401643143 = -i$ $\therefore i = 0,2401643143$ $\therefore r = 24,02\% \text{ p.a}$	<p>✓ $\frac{1}{3}x = x(1 - i)^4$</p> <p>✓ $i = 0,2401643143$</p> <p>✓ answer / antwoord</p> <p style="text-align: right;">(3)</p>
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ACCEPT/AANVAAR

6.2.1	$\text{Monthly Instalment} = \frac{R596458,10}{72}$ $= R8284,14$	✓ dividing by 72 / <i>deel deur 72</i> ✓ answer / <i>antwoord</i> (2)
6.2.2	$P = \frac{8284,14 \left(1 - \left(1 + \frac{9,5\%}{12} \right)^{-72} \right)}{\frac{9,5\%}{12}}$ $= R453312,18$ $A = P(1+i)^n$ $453312,18 = P \left(1 + \frac{9,5\%}{12} \right)^5$ $P = R435786,98$	✓ $n = 72$ ✓ substitution into correct formula <i>vervanging in die korrekte formule</i> ✓ answer ✓ $A = R453312,18$ ✓ $n = 5$ ✓ substitution into correct formula <i>vervanging in die korrekte formule</i> ✓ answer / <i>antwoord</i> (6)

6.2.1 allocate 2 marks

6.2.2 stick to original mark allocation of 6 marks

Total of the paper reduced to 147 (convert to 150)

NB – Learners that answered according the original memo – mark out of 150

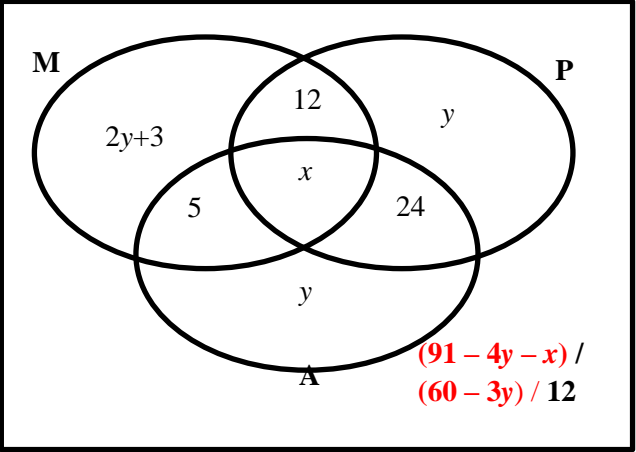
QUESTION 7/VRAAG 7

IN THIS QUESTION WE PENALISE ONCE FOR INCORRECT NOTATION

QUESTION 8/VRAAG 8

<p>8.3</p>	<p>For concave down / Vir konkaf afwaarts $f''(x) < 0$ $f'(x) = 6x^2 + 2x - 12$ $f''(x) = 12x + 2$ $\therefore 12x + 2 < 0$ $x < -\frac{1}{6}$</p> <p>IF LEARNER WORKS WITH EQUALITY SIGN AND CONCLUDES CORRECTLY. (4/4)</p> <p>IF LEARNER WORKS WITH EQUALITY SIGN BUT DOES NOT CONCLUDE CORRECTLY. (3/4)</p>	<p>✓ $f''(x) < 0$ ✓ $f'(x) = 6x^2 + 2x - 12$ ✓ $f''(x) = 12x + 2$ ✓ $x < -\frac{1}{6}$</p> <p>(4)</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">ALTERNATIVE SOLUTION</p>	<p>Point of inflection (x-coordinate) $f(x) = 2x^3 + x^2 - 12x + 9$ $x = -\frac{b}{3a}$ $= -\frac{1}{3(2)}$ $= -\frac{1}{6}$ $\therefore x < -\frac{1}{6}$</p>	<p>✓ formula / formule ✓ substitution / vervanging ✓ answer / antwoord ✓ conclusion / gevolgtrekking</p>
<p>8.4</p>	<p>$6x^2 + 2x - 12 \leq 0$ $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ $= \frac{-2 \pm \sqrt{2^2 - 4(6)(-12)}}{2 \cdot 6}$ $= \frac{-2 \pm \sqrt{292}}{12}$ $= -1,59 \text{ or / of } 1,26$ $\therefore -1,59 \leq x \leq 1,26$</p>	<p>✓ substitution into correct formula <i>vervanging in die korrekte formule</i> (BOTH MARKS CAN BE AWARDED FOR THE CORRECT X-VALUES IF LEARNER USED CALCULATOR) ✓ x-values / x-waardes ✓✓ answer / antwoord (accuracy / akkuraatheid)</p> <p>(4)</p>

QUESTION 10/VRAAG 10

<p>10.1</p>	<p style="text-align: right;">S = 135</p>  <p style="text-align: right;">(91 - 4y - x) / (60 - 3y) / 12</p>	<p>Correct entries of: Korrekte waarde van:</p> <p>✓ 5 ; 12 ; 24</p> <p>✓ 2y + 3 ; y ; y</p> <p>✓ x</p> <p>✓ 12 / (91 - 4y - x) / (60 - 3y)</p> <p style="text-align: right;">(4)</p>
<p>10.3</p>	$P(M \text{ or/of } (P \text{ and/en } A)) = \frac{2y + 3 + 5 + 12 + x + 24}{135}$ $= \frac{35 + 5 + 12 + 15 + 24}{135}$ $= \frac{91}{135} \text{ or/of } 0,67$	<p>✓ 2y + 3 + 5 + 12 ✓ x + 24</p> <p>✓ answer / antwoord</p> <p style="text-align: right;">(3)</p>
<p>ALTERNATIVE SOLUTION</p>		
$P(M \cup (P \cap A)) = P(M) + P(P \cap A) - P(M \cap P \cap A)$ $= \frac{67}{135} + \frac{39}{135} - \frac{15}{135}$ $= \frac{91}{135}$		<p>✓ formula / formule</p> <p>✓ substitution / vervanging</p> <p>✓ answer / antwoord</p> <p style="text-align: right;">(3)</p>

QUESTION 11/VRAAG 11

ALTERNATIVE SOLUTION/ALTERNATIEWE OPLOSSING

11.2	$\text{Probability} = \frac{3 \times 2 \times 3!}{5!}$ $= \frac{3}{10}$	<ul style="list-style-type: none">✓ 3 x 2✓ 3!✓ 5! ✓ answer / antwoord (4)
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We request that this must be brought to the attention of all educators marking these papers and sincerely apologise for the inconvenience.

Yours in quality education.



MS N. MBELEKI
CES: ASSESSMENT INSTRUMENTS
DEVELOPMENT AND QUESTION PAPERS
BANK MANAGEMENT

22 September 2020
DATE