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SENIORSERTIFIKAAT-EKSAMEN
NATIONAL SENIOR CERTIFICATE EXAMINATIONS/
NASIONALE SENIORSERTIFIKAAT-EKSAMEN**

MATHEMATICS P2/WISKUNDE V2

MARKING GUIDELINES/NASIENRIGLYNE

2022

**MARKS: 150
PUNTE: 150**

**These marking guidelines consist of 20 pages./
*Hierdie nasienriglyne bestaan uit 20 bladsye.***

NOTE:

- If a candidate answers a question TWICE, mark only the FIRST attempt.
- If a candidate has crossed out an attempt at an answer and not redone the question, mark the crossed-out version.
- Consistent accuracy applies in ALL aspects of the marking guidelines. Stop marking at the second calculation error.
- Assuming answers/values in order to solve a problem is NOT acceptable.

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, merk die doodgetrekte poging.
- Volgehoute akkuraatheid word in ALLE aspekte van die nasienriglyne toegepas. Hou op nasien by die tweede berekeningsfout.
- Aanvaar van antwoorde/waardes om 'n probleem op te los, word NIE toegelaat nie.

GEOMETRY • MEETKUNDE	
S	A mark for a correct statement <i>(A statement mark is independent of a reason)</i>
	'n Punt vir 'n korrekte bewering <i>('n Punt vir 'n bewering is onafhanklik van die rede)</i>
R	A mark for the correct reason <i>(A reason mark may only be awarded if the statement is correct)</i>
	'n Punt vir 'n korrekte rede <i>('n Punt word slegs vir die rede toegeken as die bewering korrek is)</i>
S/R	Award a mark if statement AND reason are both correct
	Ken 'n punt toe as die bewering EN rede beide korrek is

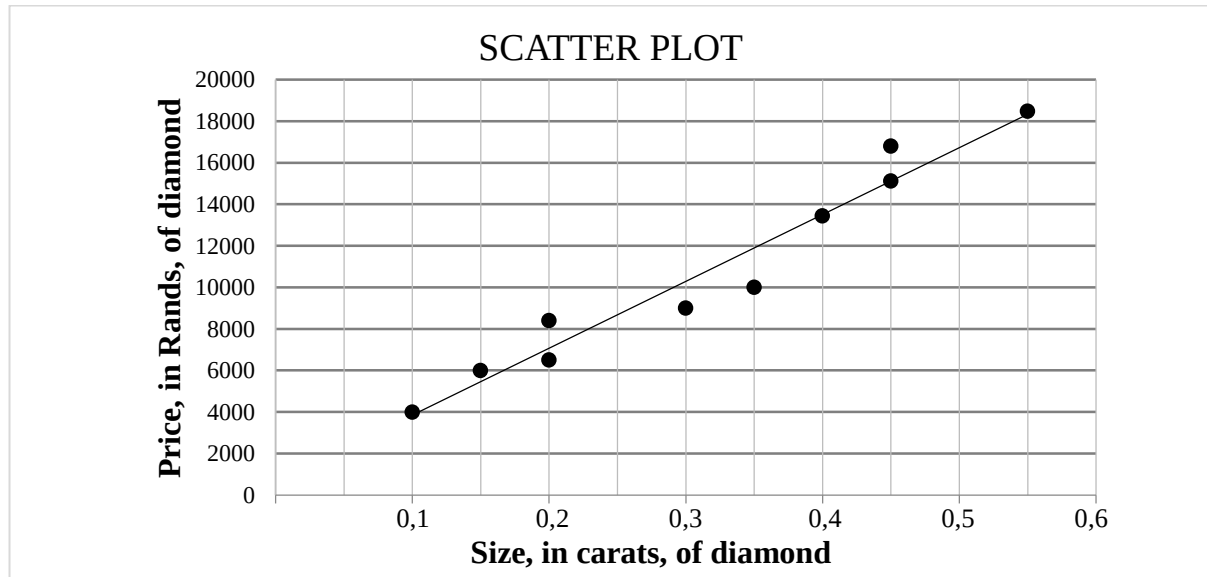
QUESTION/VRAAG 1

1.1	Modal class: $9 < m \leq 11$	✓ answer (1)																								
1.2	<table border="1"> <thead> <tr> <th>Mass (in kg)</th><th>Frequency</th><th>Cumulative frequency</th></tr> </thead> <tbody> <tr> <td>$5 < m \leq 7$</td><td>6</td><td>6</td></tr> <tr> <td>$7 < m \leq 9$</td><td>18</td><td>24</td></tr> <tr> <td>$9 < m \leq 11$</td><td>21</td><td>45</td></tr> <tr> <td>$11 < m \leq 13$</td><td>19</td><td>64</td></tr> <tr> <td>$13 < m \leq 15$</td><td>11</td><td>75</td></tr> <tr> <td>$15 < m \leq 17$</td><td>4</td><td>79</td></tr> <tr> <td>$17 < m \leq 19$</td><td>1</td><td>80</td></tr> </tbody> </table>	Mass (in kg)	Frequency	Cumulative frequency	$5 < m \leq 7$	6	6	$7 < m \leq 9$	18	24	$9 < m \leq 11$	21	45	$11 < m \leq 13$	19	64	$13 < m \leq 15$	11	75	$15 < m \leq 17$	4	79	$17 < m \leq 19$	1	80	✓ adding ✓ 80 (2)
Mass (in kg)	Frequency	Cumulative frequency																								
$5 < m \leq 7$	6	6																								
$7 < m \leq 9$	18	24																								
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$13 < m \leq 15$	11	75																								
$15 < m \leq 17$	4	79																								
$17 < m \leq 19$	1	80																								
1.3		✓ grounding (5 ; 0) ✓ points ✓ shape (3)																								
1.4	Median mass: 10,5 kg	✓✓ answer (2)																								
1.5.1	$\bar{x} = \frac{(6 \times 6 + 18 \times 8 + 21 \times 10 + 19 \times 12 + 11 \times 14 + 4 \times 16 + 1 \times 18)}{80}$ $= \frac{854}{80}$ $= 10,68$ Answer only 2/2	✓ 854 ✓ answer (2)																								
1.5.2	Learners' bags are heavier than the stipulated international guideline. Estimated mean = 10,68 kg 10% of 80 kg = 8 kg 10,68 kg > 8 kg	✓ answer ✓ 8 kg (2)																								

	OR/ OF Learners' bags are heavier than the stipulated international guideline. $\text{Estimated mean} = \frac{10,68}{80} \times 100$ $= 13,35\%$ $13,35\% > 10\%$	✓ answer ✓ 13,35% (2)
[12]		

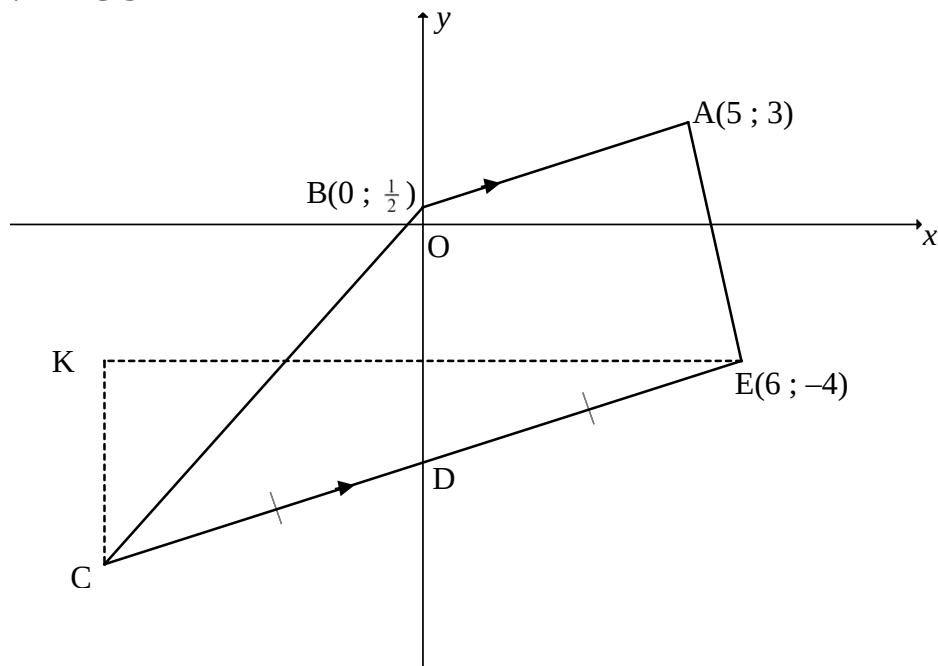
QUESTION/VRAAG 2

Size, in carats, of diamond (x)	0,1	0,15	0,2	0,2	0,3	0,35	0,4	0,45	0,45	0,55
Price, in rands, of diamond (y)	4 000	6 000	6 500	8 400	9 000	10 000	13 440	15 120	16 800	18 480



2.1	$a = 634,382\dots$ $b = 32\,189,263\dots$ $\hat{y} = 634,38 + 32189,26x$ Answer only 3/3	✓ a ✓ b ✓ equation (3)
2.2	$\hat{y} = 634,38 + 32189,26(0,25)$ $= R8\,681,70$ OR/OF $\hat{y} = R8\,681,70$ (if using calculator)	✓ substitution ✓ answer (2) ✓ ✓ answer (2)
2.3	Average price increase $= R \frac{32189,26}{20}$ per 0,05 carat $= R1\,609,46$ per 0,05 carat OR/OF Average price increase $= 0,05 \times 32\,189,26$ $= R1\,609,46$ per 0,05 carat OR/OF at 0,3: $\hat{y} = R10\,291,16$ $\therefore$ Average price increase $= 10\,291,16 - 8\,681,70$ $= R1\,609,46$ per 0,05 carat Answer only 2/2	✓ divide gradient by 20 ✓ answer (2) ✓ multiply gradient by 0,05 ✓ answer (2) ✓ Estimated price of a 0,3 carat diamond ✓ answer (2)
2.4	The point (0,35 ; 11500) is closer to the least squares regression line.	✓ reason (1)
[8]		

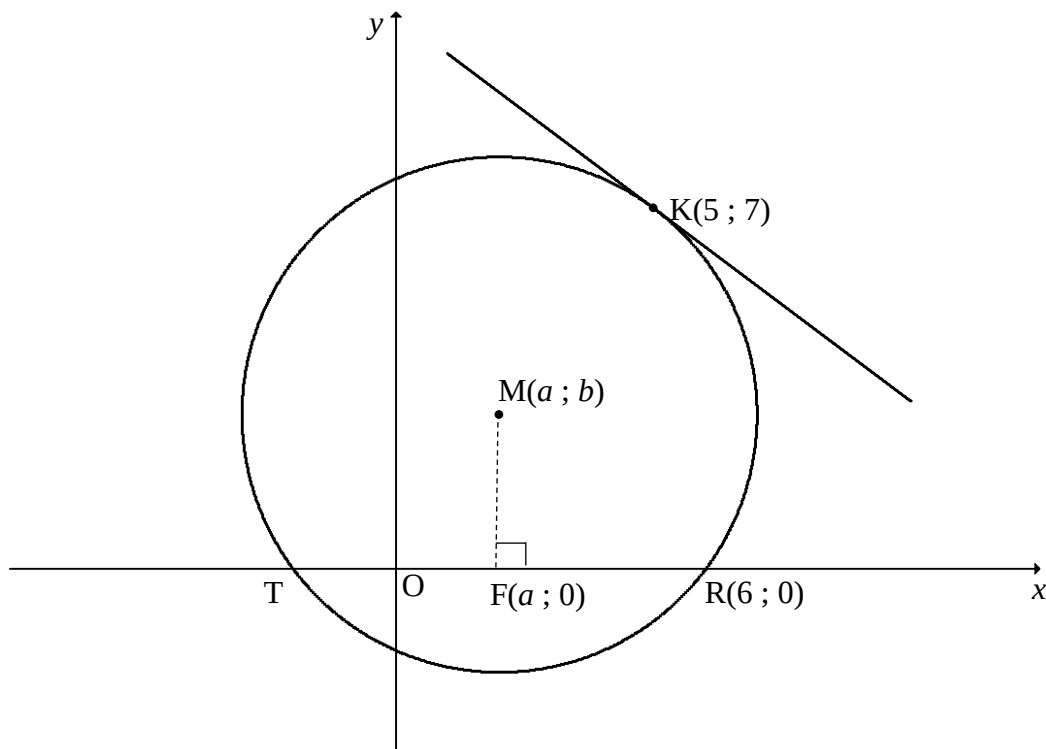
QUESTION/VRAAG 3



3.1	$m_{AB} = \frac{3 - \frac{1}{2}}{5 - 0}$ $m_{AB} = \frac{1}{2}$ Answer only 2/2	✓ substitution ✓ answer (2)
3.2	$m_{CE} = m_{BA} = \frac{1}{2}$ $-4 = \frac{1}{2}(6) + c \quad \text{OR/OF} \quad y - (-4) = \frac{1}{2}(x - 6)$ $c = -7$ $y = \frac{1}{2}x - 7$	✓ gradient ✓ substitution of E ✓ answer (3)
3.3.1	$\frac{x_C + 6}{2} = 0 \qquad \frac{y_C + (-4)}{2} = -7$ $x_C = -6 \qquad y_C = -10$ $C(-6; -10)$ Answer only 3/3	✓ D(0; -7) ✓ $x_C = -6$ ✓ $y_C = -10$ (3)
3.3.2	$\text{Area } \triangle BCD = \frac{1}{2}(7,5)(6)$ $= 22,5$ $\text{Area } \triangle ABD = \frac{1}{2}(7,5)(5)$ $= 18,75$ $\text{Area } ABCD = 22,5 + 18,75 = 41,25 \text{ units}^2$	✓ subst of correct base and height into the area formula ✓ area $\triangle BCD = 22,5$ ✓ area $\triangle ABD = 18,75$ ✓ answer (4)

3.4.1	$K(-6; -4)$	$\checkmark x_K = -6$ $\checkmark y_K = -4$ (2)
3.4.2a	KC = 6 units; KE = 12 units; $CE = \sqrt{(6)^2 + (12)^2} \quad [\text{Pythagoras}]$ $CE = \sqrt{180} = 6\sqrt{5} = 13,42$ Perimeter $\Delta KEC = 6 + 12 + \sqrt{180}$ $= 31,42 \text{ units}$	$\checkmark$ KC = 6 units $\checkmark$ KE = 12 units $\checkmark$ CE $\checkmark$ answer (4)
3.4.2b	$\tan \hat{KCE} = \frac{KE}{KC} = \frac{12}{6} = 2$ $\hat{KCE} = 63,43^\circ$ OR/OF $\sin \hat{KCE} = \frac{KE}{CE} = \frac{12}{\sqrt{180}} = \frac{2\sqrt{5}}{5}$ $\hat{KCE} = 63,43^\circ$ OR/OF $m_{CE} = \frac{1}{2}$ $\tan \theta = \frac{1}{2}$ $\theta = 26,57^\circ$ $\hat{KCE} = 90^\circ - 26,57^\circ$ $\hat{KCE} = 63,43^\circ$ OR/OF $KE^2 = KC^2 + CE^2 - 2(KC)(CE)\cos \hat{KCE}$ $(12)^2 = (6)^2 + (\sqrt{180})^2 - 2(6)(\sqrt{180})(\cos \hat{KCE})$ $\cos \hat{KCE} = \frac{\sqrt{5}}{5}$ $\hat{KCE} = 63,43^\circ$	$\checkmark$ trig ratio $\checkmark \tan \hat{KCE} = 2$ $\checkmark$ answer (3) $\checkmark$ trig ratio $\checkmark \sin \hat{KCE} = \frac{12}{\sqrt{180}}$ $\checkmark$ answer (3) $\checkmark \tan \theta = \frac{1}{2}$ $\checkmark \theta = 26,57^\circ$ $\checkmark$ answer (3) $\checkmark$ substitution into cosine rule $\checkmark$ trig ratio $\checkmark$ answer (3)
		[21]

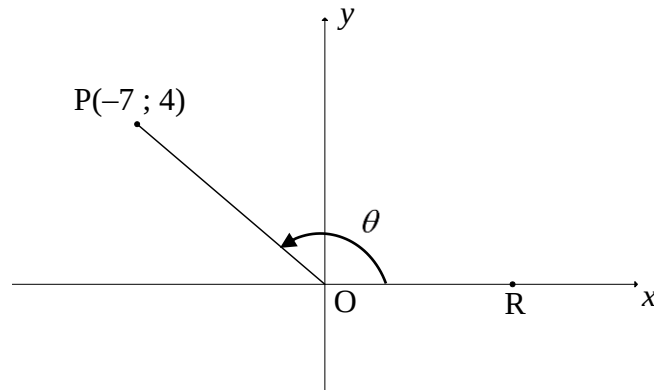
QUESTION/VRAAG 4



4.1.1	$y = x + 1$ $b = a + 1$	$\checkmark b = a + 1$ (1)
4.1.2	$MR^2 = MK^2$ $(a - 6)^2 + (b - 0)^2 = (a - 5)^2 + (b - 7)^2$ $(a - 6)^2 + (a + 1)^2 = (a - 5)^2 + (a + 1 - 7)^2$ $a^2 + 2a + 1 = a^2 - 10a + 25$ $12a = 24$ $a = 2$ $b = 3$ $\therefore M(2; 3)$	$\checkmark$ equating radii / solving simultaneously $\checkmark$ substitution $b = a + 1$ $\checkmark 12a = 24$ $\checkmark a = 2$ $\checkmark b = 3$ (5)
4.2.1	$(6 - 2)^2 + (0 - 3)^2 = r^2$ $r = 5$ OR/OF $(2 - 5)^2 + (3 - 7)^2 = r^2$ $r = 5$	$\checkmark$ substitution R and M $\checkmark r = 5$ (2) $\checkmark$ substitution K and M $\checkmark r = 5$ (2)

Answer only 2/2

4.2.2	T(-2 ; 0) TR = 8 units [line from centre $\perp$ to chord] OR/OF M(2 ; 3) F(a ; 0) FR = 4 units TR = 8 units [line from centre $\perp$ to chord] OR/OF $(x-2)^2 + (0-3)^2 = 25$ $x^2 - 4x + 4 + 9 = 25$ $x^2 - 4x - 12 = 0$ $(x-6)(x+2) = 0$ $x = 6$ or $x = -2$ TR = 8 units Answer only 2/2	✓ T(-2 ; 0) ✓ answer (2) ✓ 4 units ✓ answer (2) ✓ x values ✓ answer (2)
4.3	$m_{\text{radius}} = \frac{7-3}{5-2}$ $m_{\text{radius}} = \frac{4}{3}$ $m_{\text{tangent}} = -\frac{3}{4}$ $7 = -\frac{3}{4}(5) + c$ OR/OF $y - 7 = -\frac{3}{4}(x - 5)$ $c = \frac{43}{4}$ $y = -\frac{3}{4}x + \frac{43}{4}$ $y = -\frac{3}{4}x + \frac{43}{4}$	✓ substitution ✓ $m_{\text{radius}} = \frac{4}{3}$ ✓ $m_{\text{tangent}} = -\frac{3}{4}$ ✓ substitution ✓ answer (5)
4.4.1	N(2 ; -2)	✓ $x_N = 2$ ✓ $y_N = -2$ (2)
4.4.2	$(-2-2)^2 + (0+2)^2 = r^2$ $r^2 = 20$ $(x-2)^2 + (y+2)^2 = 20$	✓ substitution ✓ $r^2 = 20$ ✓ answer (3)
		[20]

QUESTION/VRAAG 5

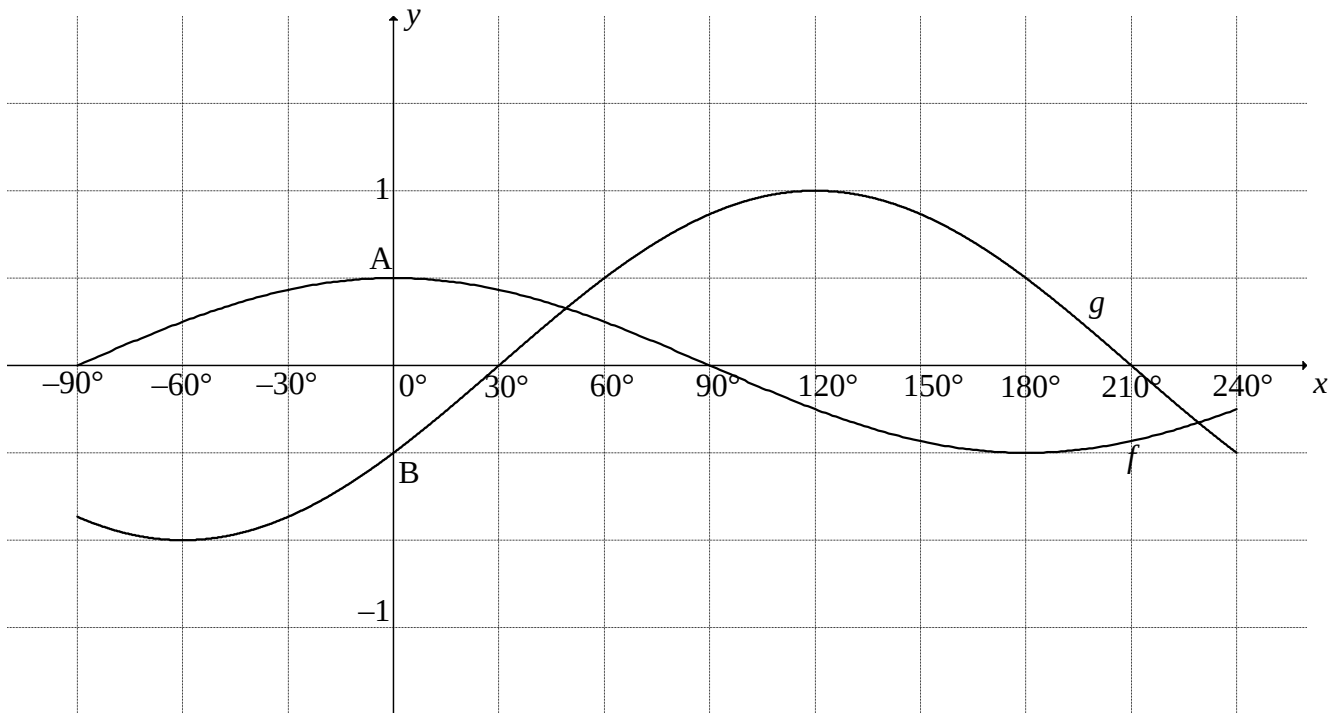
5.1.1	$OP = \sqrt{(-7)^2 + (4)^2}$ $= \sqrt{65}$ Answer only 2/2	✓ substitution ✓ answer (2)
5.1.2(a)	$\tan \theta = \frac{4}{-7}$	✓ answer (1)
5.1.2(b)	$\cos(\theta - 180^\circ) = -\cos \theta$ $= \frac{7}{\sqrt{65}}$	✓ reduction ✓ answer (2)
5.2	$\sin x \cos x + \sin x = 3\cos^2 x + 3\cos x$ $\sin x \cos x + \sin x - 3\cos^2 x - 3\cos x = 0$ $\sin x(\cos x + 1) - 3\cos x(\cos x + 1) = 0$ $(\cos x + 1)(\sin x - 3\cos x) = 0$ $\cos x = -1 \quad \text{or} \quad \sin x = 3\cos x$ $\tan x = 3$ $x = 180^\circ + k.360^\circ \quad \text{or} \quad x = 71,57^\circ + k.180^\circ ; k \in \mathbb{Z}$ OR/OF $\sin x \cos x + \sin x = 3\cos^2 x + 3\cos x$ $\sin x \cos x + \sin x - 3\cos^2 x - 3\cos x = 0$ $\sin x(\cos x + 1) - 3\cos x(\cos x + 1) = 0$ $(\cos x + 1)(\sin x - 3\cos x) = 0$ $\cos x = -1 \quad \text{or} \quad \sin x = 3\cos x$ $\tan x = 3$ $x = 180^\circ + k.360^\circ \quad \text{or} \quad x = 71,57^\circ + k.360^\circ \quad \text{or}$ $x = 251,57^\circ + k.360^\circ ; k \in \mathbb{Z}$	✓ RHS = 0 ✓ grouping ✓ factors ✓ both equations ✓ $x = 180^\circ$ ✓ $x = 71,57^\circ$ ✓ $+ k.180^\circ ; k \in \mathbb{Z}$ (7)
		✓ RHS = 0 ✓ grouping ✓ factors ✓ both equations ✓ $x = 180^\circ$ ✓ $x = 71,57^\circ$ and $251,57^\circ$ ✓ $+ k.360^\circ ; k \in \mathbb{Z}$ (7)

5.3.1	$\begin{aligned}\text{LHS} &= \frac{\sin 3x}{1 - \cos 3x} \times \frac{1 + \cos 3x}{1 + \cos 3x} \\ &= \frac{(\sin 3x)(1 + \cos 3x)}{(1 - \cos 3x)(1 + \cos 3x)} \\ &= \frac{(\sin 3x)(1 + \cos 3x)}{1 - \cos^2 3x} \\ &= \frac{(\sin 3x)(1 + \cos 3x)}{\sin^2 3x} \\ &= \frac{1 + \cos 3x}{\sin 3x} \\ &= \text{RHS}\end{aligned}$ OR/OF $\begin{aligned}\text{LHS} &= \frac{\sin 3x}{1 - \cos 3x} \times \frac{\sin 3x}{\sin 3x} \\ &= \frac{\sin^2 3x}{\sin 3x(1 - \cos 3x)} \\ &= \frac{1 - \cos^2 3x}{\sin 3x(1 - \cos 3x)} \\ &= \frac{(1 - \cos 3x)(1 + \cos 3x)}{\sin 3x(1 - \cos 3x)} \\ &= \frac{1 + \cos 3x}{\sin 3x} \\ &= \text{RHS}\end{aligned}$	✓ multiply by “1” ✓ $1 - \cos^2 3x$ ✓ square identity (3) ✓ multiply by “1” ✓ square identity ✓ factors (3)
5.3.2	undefined when $\sin 3x = 0$ and $1 - \cos 3x = 0$ $3x = 0^\circ$ or $3x = 180^\circ$ and $3x = 0^\circ$ or $3x = 360^\circ$ $x = 0^\circ$ or $x = 60^\circ$	✓ $\sin 3x = 0$ and $1 - \cos 3x = 0$ ✓ 0° ✓ 60° (3)
[18]		

QUESTION/VRAAG 6

6.1	$\frac{\sin 10^\circ}{\cos 440^\circ} + \tan(360^\circ - \theta) \cdot \sin 2\theta$ $= \frac{\cos 80^\circ}{\cos 80^\circ} - \tan \theta (2 \sin \theta \cos \theta)$ $= 1 - \frac{\sin \theta}{\cos \theta} (2 \sin \theta \cos \theta)$ $= 1 - 2 \sin^2 \theta$ $= \cos 2\theta$	✓ $-\tan \theta$ ✓ $\cos 80^\circ$ ✓ co-ratio ✓ double angle ✓ quotient identity ✓ answer (6)
6.2.1	$\sin(60^\circ + 2x) + \sin(60^\circ - 2x) = k \cos 2x$ $(\sin 60^\circ \cos 2x + \cos 60^\circ \sin 2x) + (\sin 60^\circ \cos 2x - \cos 60^\circ \sin 2x) = k \cos 2x$ $2 \sin 60^\circ \cos 2x = k \cos 2x$ $2 \left(\frac{\sqrt{3}}{2} \right) \cos 2x = k \cos 2x$ $\therefore k = \sqrt{3}$	✓ both expansions correct ✓ special $\angle$ s ✓ answer (3)
6.2.2	$\tan 60^\circ [\sin(60^\circ + 2x) + \sin(60^\circ - 2x)]$ $= \tan 60^\circ [k \cos 2x]$ $= \sqrt{3} (\sqrt{3} \cos 2x)$ $= 3(2 \cos^2 x - 1)$ $= 3(2(\sqrt{t})^2 - 1)$ $= 6(\sqrt{t})^2 - 3$ $= 6t - 3$	✓ special $\angle$ ✓ double $\angle$ s ✓ answer i.t.o t (3)
[12]		

QUESTION/VRAAG 7



7.1	$A\left(0; \frac{1}{2}\right) \quad B\left(0; -\frac{1}{2}\right)$ $AB = \frac{1}{2} - \left(-\frac{1}{2}\right)$ $= 1 \text{ unit}$	✓ y-values ✓ answer Answer only 2/2
7.2	Range of $f: y \in \left[-\frac{1}{2}; \frac{1}{2}\right]$ Range of $3f(x) + 2: y \in \left[\frac{1}{2}; 3\frac{1}{2}\right]$ OR/OF $\frac{1}{2} \leq y \leq 3\frac{1}{2}$	✓ critical values ✓ answer
7.3	$x = 90^\circ$	✓✓ $x = 90^\circ$
7.4.1	$x \in (30^\circ; 90^\circ) \cup (210^\circ; 240^\circ]$ OR/OF $30^\circ < x < 90^\circ \text{ or } 210^\circ < x \leq 240^\circ$	✓ $x \in (30^\circ; 90^\circ)$ ✓ $(210^\circ; 240^\circ]$ ✓ $30^\circ < x < 90^\circ$ ✓ $210^\circ < x \leq 240^\circ$
7.4.2	$x \in (-55^\circ; 125^\circ)$ OR/OF $-55^\circ < x < 125^\circ$	✓ critical values ✓ answer ✓ critical values ✓ answer

[10]

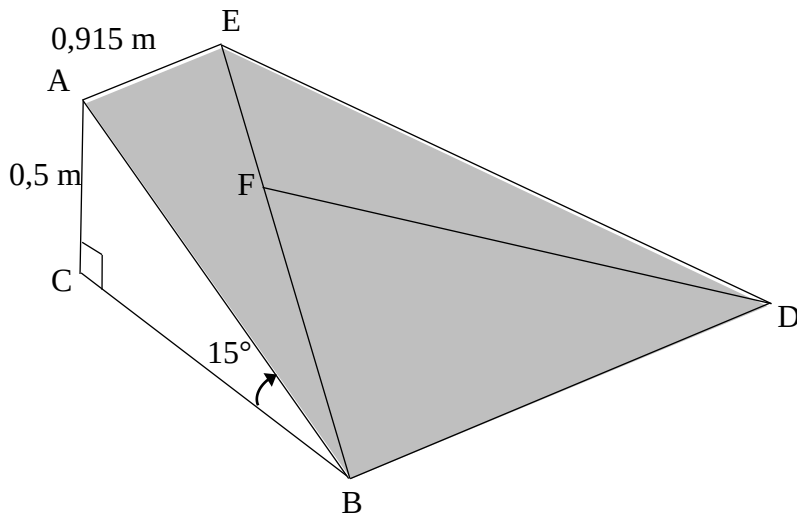
QUESTION/VRAAG 8

FIGURE I

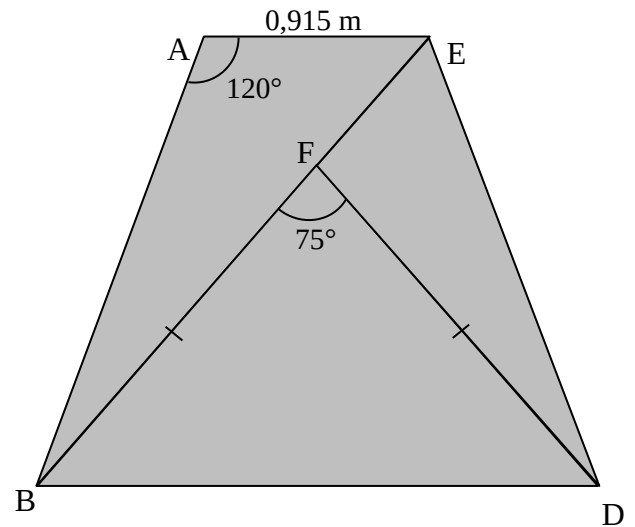
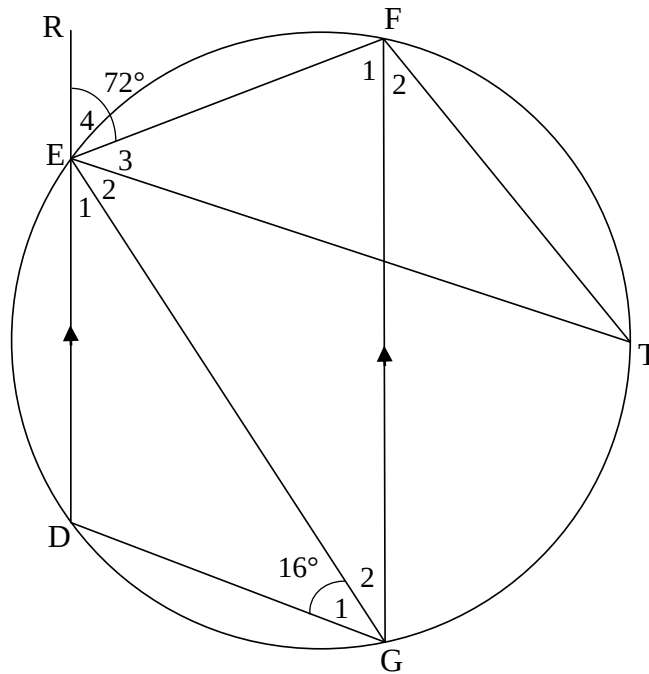


FIGURE II (top view)

8.1	$\frac{0,5}{AB} = \sin 15^\circ$ $AB = \frac{0,5}{\sin 15^\circ}$ $AB = 1,93 \text{ m}$ Answer only 2/2	✓ trig ratio ✓ answer (2)
8.2	$BE^2 = AB^2 + AE^2 - 2(AB)(AE)\cos \hat{BAE}$ $BE^2 = (1,93)^2 + (0,915)^2 - 2(1,93)(0,915)(\cos 120^\circ)$ $BE = 2,52 \text{ m}$	✓ correct use of cosine rule ✓ substitution ✓ answer (3)
8.3	$BF = FD = \frac{5}{7}(2,52) = 1,80 \text{ m}$ $\text{Area } \triangle BFD = \frac{1}{2}(BF)(FD)\sin \hat{BFD}$ $= \frac{1}{2}(1,8)(1,8)(\sin 75^\circ)$ $= 1,56 \text{ m}^2$	✓ BF ✓ correct substitution into the area rule ✓ answer (3)
[8]		

QUESTION/VRAAG 9

9.1

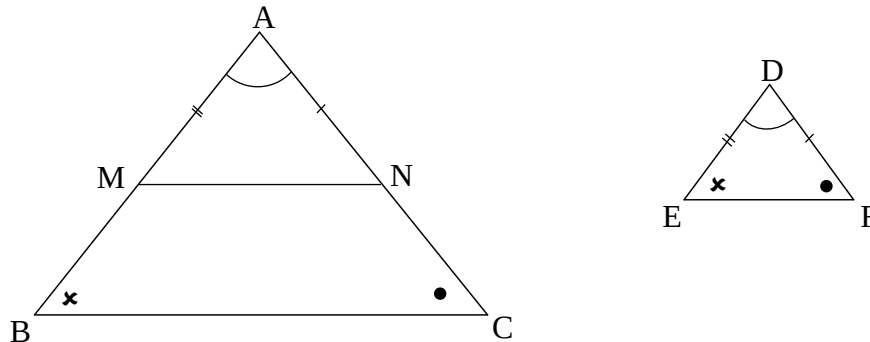


9.1.1	$\widehat{DGF} = \widehat{E}_4 = 72^\circ$ [ext $\angle$ of cyclic quad/ buite $\angle$ v kvh]	✓ S ✓ R (2)
9.1.2	$\widehat{G}_2 = 72^\circ - 16^\circ = 56^\circ$ $\widehat{T} = \widehat{G}_2 = 56^\circ$ [$\angle$ s in the same seg/ $\angle$ e in dies. $\odot$ segment]	✓ S ✓ S / R (2)
9.1.3	$\widehat{F}_1 = \widehat{E}_4 = 72^\circ$ [alt $\angle$ s; DE $\parallel$ GF / verw. $\angle$ e; DE $\parallel$ GF] $\therefore \widehat{GEF} = 52^\circ$ [sum of $\angle$ s in Δ / $\angle$ e van Δ] OR/OF $\widehat{E}_1 = 56^\circ$ [alt $\angle$ s; DE $\parallel$ GF / verw. $\angle$ e; DE $\parallel$ GF] $\therefore \widehat{GEF} = 52^\circ$ [$\angle$ s on a str. line/ $\angle$ e op 'n reguitlyn]	✓ S / R ✓ S (2) ✓ S / R ✓ S (2)

	OR / OF $NM : MS = 4 : 1$ $KR = MS = 5,25$ [opp side of $ ^m$ / teenoorst. sye van $ ^m$] $KL = NM = 21$ $RL + 5,25 = 21$ $RL = 15,75$	✓ S ✓ R ✓ S ✓ answer (4)
[16]		

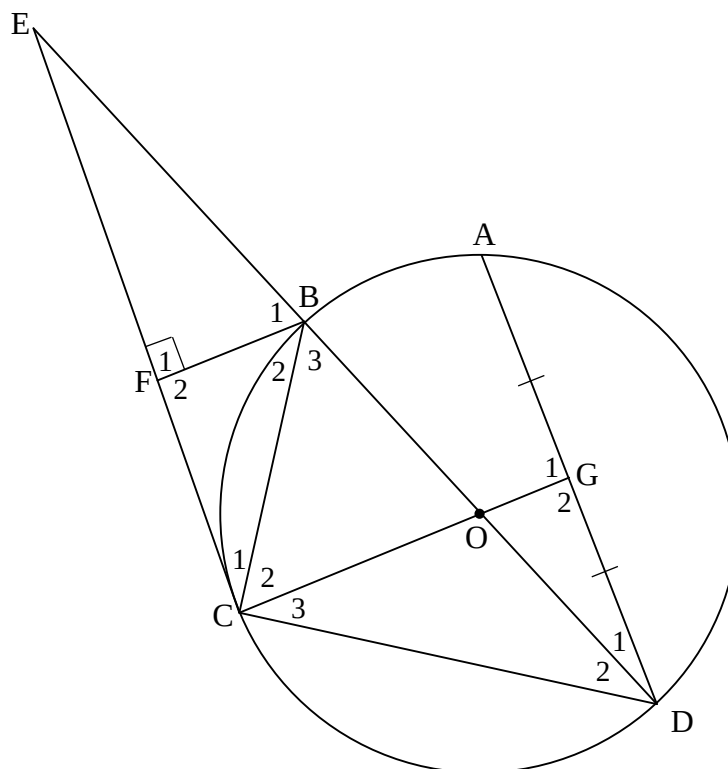
QUESTION/VRAAG 10

10.1



10.1	Constr: Let M and N lie on AB and AC respectively such that $AM = DE$ and $AN = DF$. Draw MN. Proof: In $\triangle AMN$ and $\triangle DEF$ $AM = DE$ [Constr / Konstruksie] $AN = DF$ [Constr / Konstruksie] $\hat{A} = \hat{D}$ [Given / Gegee] $\therefore \triangle AMN \cong \triangle DEF$ [s, $\angle$, s] $\therefore \hat{AMN} = \hat{E} = \hat{B}$ $MN \parallel BC$ [corresp $\angle$'s are equal/ ooreenk. $\angle$ e gelyk] $\frac{AB}{AM} = \frac{AC}{AN}$ [line $\parallel$ one side of $\triangle$ OR/OF prop theorem; $MN \parallel BC$ / Lyn $\parallel$ een sy v $\triangle$] $\therefore \frac{AB}{DE} = \frac{AC}{DF}$ [AM=DE and AN=DF]	✓Constr ✓S ✓R ✓S /R ✓S ✓R (6)
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10.2



10.2.1(a)	$\hat{F}\hat{C}O = 90^\circ$ [tan $\perp$ radius / raaklyn $\perp$ radius] $\hat{F}_1 = 90^\circ$ [BF $\perp$ EC] $\therefore \hat{F}\hat{C}O = \hat{F}_1 = 90^\circ$ FB $\parallel$ CG [corresp $\angle$ s = / ooreenk. $\angle$ gelyk]	$\checkmark$ S / R $\checkmark$ S $\checkmark$ R (3)
10.2.1(b)	In $\triangle FCB$ and $\triangle CDB$ $\hat{B}\hat{C}D = 90^\circ$ [$\angle$ in semi-circle / $\angle \frac{1}{2} \odot$] $\hat{F}_2 = 90^\circ$ [BF $\perp$ EC] $\therefore \hat{F}_2 = \hat{B}\hat{C}D = 90^\circ$ $\hat{C}_1 = \hat{D}_2$ [tan chord theorem / $\angle$ tussen rkl en koord] $\hat{B}_2 = \hat{B}_3$ [sum of $\angle$ s in $\triangle$ / $\angle$ e van $\triangle$] $\therefore \triangle FCB \parallel \triangle CDB$ OR/OF In $\triangle FCB$ and $\triangle CDB$ $\hat{B}\hat{C}D = 90^\circ$ [$\angle$ in semi-circle / $\angle \frac{1}{2} \odot$] $\hat{F}_2 = 90^\circ$ [BF $\perp$ EC] $\therefore \hat{F}_2 = \hat{B}\hat{C}D = 90^\circ$ $\hat{C}_1 = \hat{D}_2$ [tan chord theorem / $\angle$ tussen rkl en koord] $\therefore \triangle FCB \parallel \triangle CDB$ [$\angle, \angle, \angle$]	$\checkmark$ S / R $\checkmark$ S $\checkmark$ S $\checkmark$ R $\checkmark$ S $\checkmark$ S / R $\checkmark$ S $\checkmark$ S $\checkmark$ R $\checkmark$ R (5)

10.2.2	$\hat{G}_1 = 90^\circ$ [line from centre to midpt of chord / midpt. $\odot$; midpt. koord]	✓ R (1)
10.2.3	In $\triangle GCD$ and $\triangle CDB$ $\hat{G}_2 = \hat{B}\hat{C}\hat{D} = 90^\circ$ $\hat{C}_3 = \hat{D}_2$ [∠s opp equal sides / ∠e teenoor gelyke sye] $\hat{G}\hat{D}\hat{C} = \hat{B}_3$ [sum of ∠s in $\triangle$ / ∠e van $\triangle$] $\therefore \triangle GCD \parallel \triangle CDB$ [∠, ∠, ∠] $\therefore \frac{CD}{DB} = \frac{CG}{CD}$ [$\triangle$ s] $\therefore CD^2 = CG \cdot DB$	✓ identifying $\triangle$ s ✓ S ✓ S / R ✓ S OR ✓ R ✓ S (5)
10.2.4	$\frac{BC}{DB} = \frac{FB}{BC}$ [$\triangle FCB \parallel \triangle CDB$] $\therefore BC^2 = DB \cdot FB$ $CD^2 + BC^2 = CG \cdot DB + DB \cdot FB$ $DB^2 = DB(CG + FB)$ $DB = CG + FB$	✓ S ✓ R ✓ S ✓ sum ✓ $DB^2 = CD^2 + BC^2$ (5)
		[25]

TOTAL/TOTAAL: 150