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**NASIONALE
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GRADE 10

NOVEMBER 2018

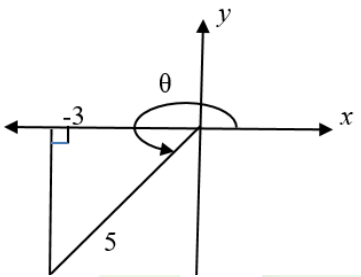
**TEGNIESE WISKUNDE V2
NASIENRIGLYN**

PUNTE: 100

Hierdie nasienriglyn bestaan uit 11 bladsye.

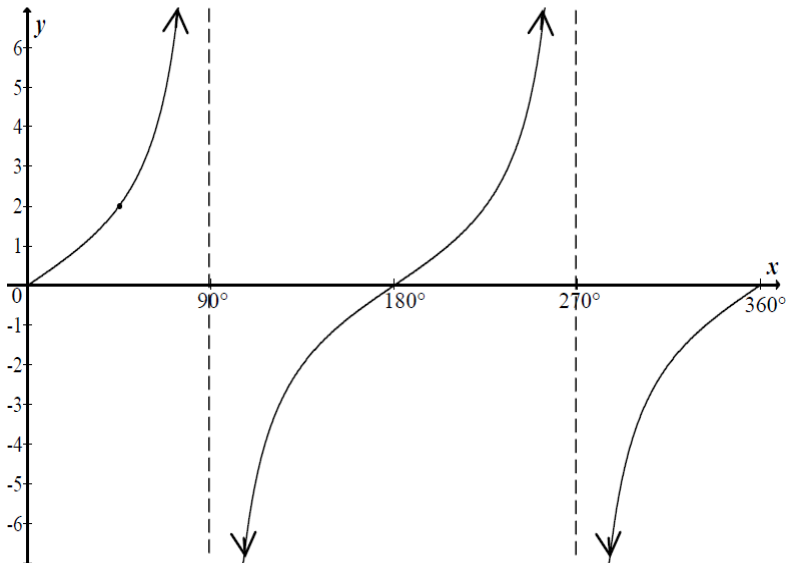
VRAAG 1			
1.1.1	$M\left(\frac{x_1 + x_2}{2}; \frac{y_1 + y_2}{2}\right)$ $\therefore M\left(\frac{2+0}{2}; \frac{-4+3}{2}\right)$ $\therefore M\left(1; -\frac{1}{2}\right)$	✓ Vervanging ✓ Antwoord	(2)
1.1.2	$m_{MB} = \frac{y_2 - y_1}{x_2 - x_1}$ $= \frac{-\frac{1}{2} - (-1)}{1 - (-3)}$ $= \frac{-\frac{1}{2} + 1}{1 + 3}$ $\therefore m_{MB} = \frac{1}{8}$	✓ Vervanging ✓ Antwoord	(2)
1.1.3	$m_{MB} = \frac{1}{8}$ $y = mx + c$ $-1 = \frac{1}{8}(-3) + c$ $\therefore c = -\frac{5}{8}$ $\therefore y = \frac{1}{8}x - \frac{5}{8}$ <p style="text-align: center;">OF</p> $y - y_1 = m(x - x_1)$ $y - (-1) = \frac{1}{8}(x - (-3))$ $y = \frac{1}{8}x + \frac{3}{8} - 1$ $\therefore y = \frac{1}{8}x - \frac{5}{8}$	✓ Vervanging ✓ $c = -\frac{5}{8}$ ✓ Vergelyking ✓ Vervanging ✓ Vereenvoudiging ✓ Antwoord	(3)

1.1.4	$CD^2 = (x_2 - x_1)^2 + (y_2 - y_1)^2$ $5^2 = (k - 2)^2 + (0 - (-4))^2$ $5^2 = (k - 2)^2 + (0 + 4)^2$ $25 = (k - 2)^2 + 16$ $k^2 - 4k + 4 - 9 = 0$ $k^2 - 4k - 5 = 0$ $\therefore (k - 5)(k + 1) = 0$ $k = -1 \text{ of } k = 5$ $\therefore k = 5$	✓ Vervanging ✓ Standaardvorm ✓ Faktore ✓ Antwoord	(4)
1.1.5	$BC = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ $\therefore BC = \sqrt{(2 - (-3))^2 + (-4 - (-1))^2}$ $\therefore BC = \sqrt{34}$ $AD = \sqrt{(5 - 0)^2 + (0 - 3)^2}$ $\therefore AD = \sqrt{34}$ $\therefore BC = AD = \sqrt{34}$ $\Rightarrow \textcolor{red}{BC = AD}$ $\therefore ABCD$ is 'n parallelogram (teenoorst. sye van vierhoek =) OF $m_{BC} = -\frac{3}{5}$ $m_{AD} = \frac{0 - 3}{5 - 0}$ $\therefore m_{AD} = -\frac{3}{5} = m_{BC}$ $\therefore BC \parallel AD$ $m_{AB} = \frac{3 - 1}{0 - 3} = \frac{2}{-3}$ $m_{DC} = \frac{0 - 4}{5 - 2} = \frac{-4}{3}$ $m_{AB} = m_{DC} = \frac{2}{-3}$ $\therefore AB \parallel DC$ $\therefore ABCD$ is 'n parallelogram (teenoorst. sye van vierhoek □)	✓ BC ✓ AD ✓ BC = AD ✓ Gevolgtrekking ✓ $m_{AD} = m_{BC} = -\frac{3}{5}$ ✓ $m_{AB} = m_{DC} = \frac{2}{-3}$ ✓ AB // DC ✓ Gevolgtrekking	(4)
			[15]

VRAAG 2			
2.1.1	$\operatorname{cosec} A + \cot B$ $= \frac{1}{\sin A} + \frac{1}{\tan B}$ $= \frac{1}{\sin 57^\circ} + \frac{1}{\tan 39^\circ}$ $= 2.43$	✓ Resiproke ✓ Vervanging ✓ Antwoord	(3)
2.1.2	$2 \cos \frac{3A}{2}$ $= 2 \cos \frac{3(57^\circ)}{2}$ $= 0.16$	✓ Vervanging ✓ Antwoord	(2)
2.2.1	$5 \cos \theta = -3$ $\cos \theta = -\frac{3}{5}$  $r^2 = x^2 + y^2$ $5^2 = (-3)^2 + y^2$ $y^2 = 25 - 9$ $= 16$ $\therefore y = -4$ $\cos \theta + \tan \theta$ $= \frac{-3}{5} + \left(\frac{-4}{-3} \right)$ $= -\frac{3}{5} + \frac{4}{3}$ $= \frac{11}{15}$	✓ Korrekte Diagram ✓ $y = -4$ ✓ Vervanging ✓ Antwoord	(4)

2.2.2	$\sec \theta = \frac{r}{x}$ $\sec \theta = \frac{5}{-3}$ $\therefore \sec \theta = -\frac{5}{3}$ <p style="text-align: center;">OF</p> $\sec \theta = \frac{1}{\cos \theta}$ $= \frac{1}{-\frac{3}{5}}$ $\therefore \sec \theta = -\frac{5}{3}$	$\checkmark \sec \theta = \frac{r}{x}$ $\checkmark \text{ Vervanging}$ $\checkmark \text{ Antwoord}$ $\checkmark \text{ Resiprook}$ $\checkmark \text{ Vervanging}$ $\checkmark \text{ Antwoord}$	(3)
2.3	$2 \tan(2x + 12^\circ) - 3 = 1$ $2 \tan(2x + 12^\circ) = 4$ $\tan(2x + 12^\circ) = 2$ $2x + 12^\circ = \tan^{-1}(2)$ $2x + 12^\circ = 63,43^\circ$ $2x = 63,43^\circ - 12^\circ$ $2x = 51,43$ $x = 25,72$	$\checkmark \text{ Oorbring van 3}$ $\checkmark \tan(2x + 12^\circ) = 2 \quad \checkmark$ $\tan^{-1}(2)$ $\checkmark 2x = 51,43^\circ$ $\checkmark \text{ Antwoord}$	(5)
			[18]

VRAAG 3			
3.1	$\hat{ABC} = 90^\circ$ ($AB \perp AD$)	✓ Bewering ✓ Rede	(2)
3.2	$\hat{DAC} + \hat{BAC} = 90^\circ$ ($AB \perp AD$) $\therefore \hat{BAC} = 49^\circ$ $\therefore \hat{ACB} = 41^\circ$ ($\angle^e \text{ van } \Delta ABC$) $\tan \hat{ACB} = \frac{AB}{BC}$ $\therefore AB = 45 \tan 41^\circ$ $\therefore AB = 39.12m$ $\therefore AB = 3912cm$	✓ $\hat{BAC} = 49^\circ$ ✓ Bewering & Rede ✓ Vervang. in tan verh. ✓ Antwoord	(4)
3.3	$\tan \hat{EAD} = \frac{ED}{AD}$ $\tan 73^\circ = \frac{ED}{45}$ $\therefore ED = 45 \tan 73^\circ$ $\therefore ED = 147.19m$ $\therefore ED = 14719cm$	✓ Vervanging ✓ Vereenvoudiging ✓ Antwoord	(3)
3.4	$EC = CD + ED$ $CD = 45 \tan 41^\circ$ $\therefore CD = 39.12m$ $\therefore CD = 3912cm$ $\Rightarrow EC = 3912cm + 14719cm$ $\therefore EC = 18631cm$	✓ $CD = 3912 cm$ ✓ $3912cm + 14719cm$ ✓ Antwoord	(3)
			[12]

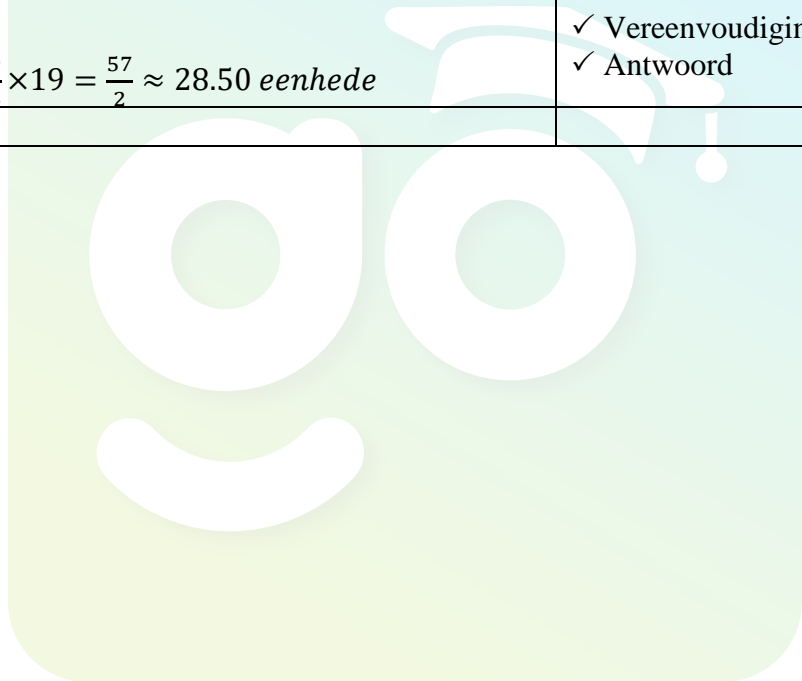
QUESTION/VRAAG 4			
4.1.1		<ul style="list-style-type: none"> ✓ x-afsnitte ✓ y-afsnit ✓ asimptote ✓ vorm 	(4)
4.1.2	Periode is 180°	✓ ✓ Antwoord	(2)
4.1.3	$y = -3\tan x$	✓ Antwoord	(1)
4.2.1	$g(x) = a \sin x$ $3 = a \cos 0^\circ$ $3 = a(1)$ $a = 3$ <div style="border: 1px solid black; padding: 5px; display: inline-block; margin-top: 10px;">Slegs antwoord: Volpunte</div>	<ul style="list-style-type: none"> ✓ Vervanging ✓ Antwoord 	(2)
4.2.2	Waardeversameling: $-1 \leq y \leq 5$	<ul style="list-style-type: none"> ✓ - 1 ✓ 5 	(2)
			[11]

VRAAG 5			
5.1.1	$\widehat{PRS} = 30^\circ$ (verw. $\angle e$; $PQ \parallel RS$)	✓ Bewering ✓ Rede	(2)
5.1.2	$\widehat{TRS} = 40^\circ$ (ooreenk. $\angle e$; $PQ \parallel RS$)	✓ Bewering ✓ Rede	(2)
5.1.3	$\widehat{P} + \widehat{Q} + \widehat{PRQ} = 180^\circ$ ($\angle e$ van Δ) $30^\circ + 40^\circ + \widehat{PRQ} = 180^\circ$ $\widehat{PRQ} = 180^\circ - 30^\circ - 40^\circ$ $= 110^\circ$	✓ Bewering en rede ✓ Antwoord	(2)
5.1.4	$\widehat{PRT} = \widehat{PRS} + \widehat{SRT}$ (dieselfde \angle) $\widehat{PRT} = 30^\circ + 40^\circ = 70^\circ$ OF $\widehat{PRT} = \widehat{Q} + \widehat{P}$ (buite \angle van Δ) $\therefore \widehat{PRT} = 40^\circ + 30^\circ$ $\therefore \widehat{PRT} = 70^\circ$	✓ Bewering en rede ✓ Antwoord	(2)
5.1.5	$\widehat{P} + \widehat{Q} = \widehat{PRT}$ (buite \angle van Δ) OF \widehat{PRT} is 'n binne hoek van driehoek PQR , dus \widehat{PRT} is die som van \widehat{Q} en \widehat{P} (twee teenoorstaande binnehoeke)	✓ Rede ✓ Rede	(1)
			[9]

VRAAG 6			
6.1	ABDE is 'n gelykbenige trapesium. Gegee een paar sye gelyk en die ander paar is ewewydig	✓ Trapesium ✓ Gelyke paar ✓ Ewewydige paar	(3)
6.2.1	$\widehat{BAE} + \widehat{EDB} = 180^\circ$ (Teenoorst $\angle e$ van gelykbenige Trapesium) $2x + \widehat{EDB} = 180^\circ$ $\therefore \widehat{EDB} = 180^\circ - 2x$	✓ Bewering en rede ✓ Antwoord	(2)
6.2.2	$\widehat{BAE} = \widehat{AED}$ (basis $\angle e$: Gelykbenige trapesium) $\widehat{AED} = 2x$	✓ Bewering en rede ✓ Antwoord	(2)
6.3	$180^\circ - 2x = x$ (teenoorst $\angle e$ van parm) $3x = 180^\circ$ $\therefore x = 60^\circ$	✓ $180^\circ - 2x = x$ ✓ $x = 60^\circ$	(2)
6.4	$\widehat{ACB} = \widehat{CAB}$ (verw. $\angle e$ AE//BD) Dus, driehoek ABC is gelykbenig Dus ABCE is 'n Rhombus (aanlig sye is gelyk, AB=BC)	✓ Bewering en rede ✓ Gelykbenig ✓ Gevolgtrekking ✓ Rede	(4)
			[13]



VRAAG 7			
7.1.1	Bewys: In ΔPQO en MNO \hat{O} is gemeenskaplik $\angle OPQ = \angle OMN$ (ooreenk. \angle e; $PQ \parallel MN$) $\angle OQP = \angle ONM$ (ooreenk. \angle e; $PQ \parallel MN$) $\Delta PQO \sim \Delta MNO$ ($\angle \angle \angle$)	✓ \hat{O} is gemeenskaplik ✓ Bewering en rede ✓ Bewering en rede $\Delta PQO \sim \Delta MNO$ ($\angle \angle \angle$)	(3)
7.1.2	$\frac{PQ}{MN} = \frac{QO}{NO} = \frac{PO}{MO}$	✓ Antwoord	(1)
7.2.1	$\frac{OQ}{OM} = \frac{PQ}{MN}$ ($\Delta PQO \sim \Delta MNO$) $\frac{OQ}{12} = \frac{6}{9}$ $OQ = \frac{6}{9} \times 12$ $OQ = 8$ eenhede	✓ Bewering en rede ✓ Vereenvoudiging ✓ Antwoord	(3)
7.2.2	$\frac{PM}{OP} = \frac{MN}{PQ}$ $\frac{PM}{19} = \frac{9}{6}$ $PM = \frac{9}{6} \times 19 = \frac{57}{2} \approx 28.50$ eenhede	✓ $\frac{PM}{19} = \frac{9}{6}$ ✓ Vereenvoudiging ✓ Antwoord	(3)
			[10]



VRAAG 8			
8.1.1	$107,5^\circ = 107^\circ + 0,5 \times 60$ $= 107 + 30$ $= 107^\circ 30' 00''$	✓ Maal met 60 ✓ 30' ✓ 00''	(3)
8.1.2	$69^\circ 64' 89'' = 69^\circ + \frac{64}{60} + \frac{89}{60 \times 60}$ $= 69,1^\circ$	✓✓ Deel deur 60 en 3600 ✓ Antwoord	(3)
8.1.3	$\theta = s/r$ $= \frac{35}{7} \times \frac{180}{\pi}$ $= 286,48^\circ$	✓ $\theta = s/r$ ✓ $\frac{35}{7}$ ✓ Maal met $\frac{180}{\pi}$ ✓ 286,48	(4)
8.1.4	$2\pi - \frac{\pi}{9} - 120^\circ$ $= \frac{17}{9}\pi - 120^\circ$ $= \frac{17}{9}\pi \times \frac{180}{\pi} - 120^\circ$ $= 340^\circ - 120^\circ$ $= 220^\circ$	✓ $\frac{17}{9}\pi$ ✓ Maal met $\frac{180}{\pi}$ ✓ Antwoord	(3)
			[13]
		TOTAAL:	100

