



LEARNER'S NAME/
NAAM VAN LEERDER:

CLASS / KLAS

**NATIONAL SENIOR CERTIFICATE/
NASIONALE SENIOR SERTIFIKAAT**

GRADE/GRAAD 12

SEPTEMBER 2022

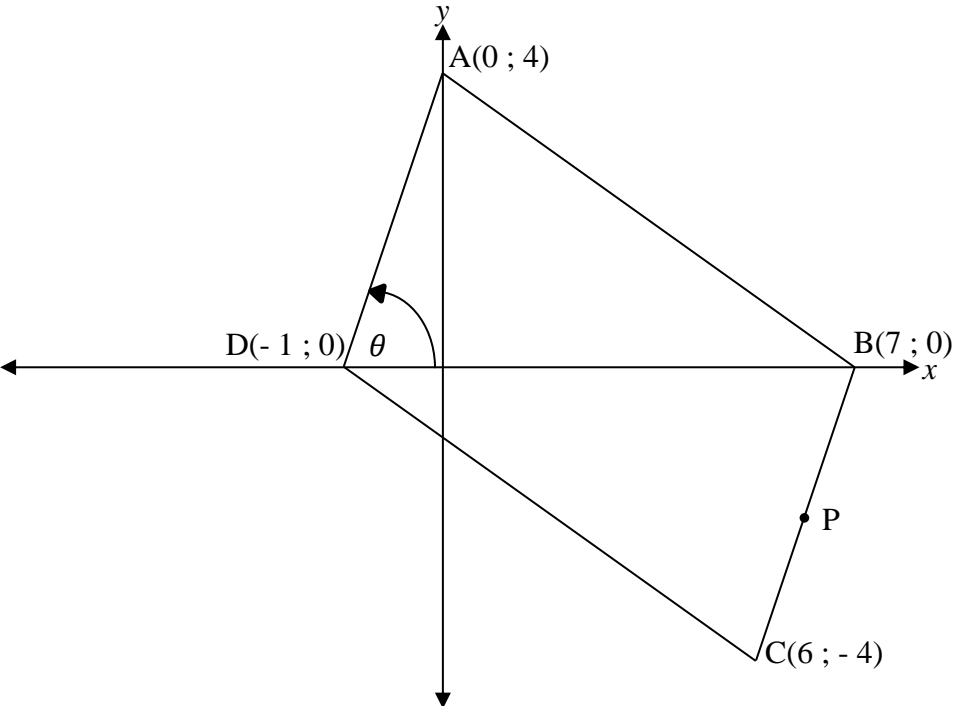
**TECHNICAL MATHEMATICS P2/TEGNIJSE WISKUNDE V2
SPECIAL ANSWER BOOK/SPEZIALE ANTWOORDEBOEK**

QUESTION/VRAAG	MARKS/ PUNTE	HOD/HVD (Level 1 mod./Vlak 1 mod.)				DISTRICT/DISTRIK (Level 2 mod./Vlak 2 mod.)				PROVINCIAL/PROVINSIAAL (Level 3 mod./Vlak 3 mod.)			
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
TOTAL/TOTAAL													

This special answer book consists of 28 pages./
Hierdie spesiale antwoordeboek bestaan uit 28 bladsye.

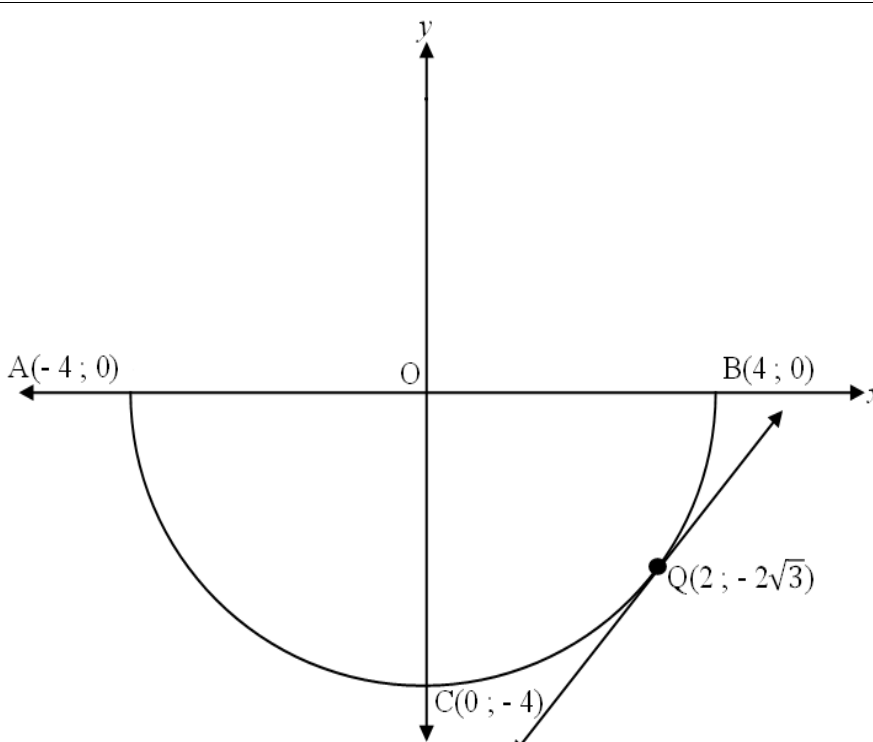
FOLLOW THESE INSTRUCTIONS CAREFULLY	VOLG HIERDIE INSTRUKSIES NOUKEURIG
<p>1. Answer ALL questions in the spaces provided.</p> <p>2. No pages may be torn from this answer book.</p> <p>3. Answers must be written in black/blue ink as distinctly as possible. Do not write in the margins.</p> <p>4. Indicate the questions you have answered by drawing a circle around the relevant numbers on the front cover of the answer book where marks are to be recorded.</p> <p>5. Draw a through any work/rough work that must not be marked.</p> <p>6. In the event that you use the additional space provided:</p> <p>6.1 Write down the number of the question</p> <p>6.2 Leave a line and rule off after your answer.</p>	<p>1. Beantwoord ALLE vrae in die ruimtes wat voorsien is.</p> <p>2. Geen bladsye mag uit hierdie antwoordeboek geskeur word nie.</p> <p>3. Skryf die antwoorde so duidelik moontlik met swart/blou ink. Moenie in die kantlyn skryf nie.</p> <p>4. Dui die vrae wat jy beantwoord het aan op die voorblad van die antwoordeboek waar die punte aangebring is, deur 'n kringetjie te trek om die nommers van die vrae wat jy beantwoord het.</p> <p>5. Trek 'n netjiese lyn deur enige werk/rofwerk wat nie nagesien moet word nie.</p> <p>6. Ingeval jy die bykomende ruimte wat voorsien word, gebruik:</p> <p>6.1 Skryf die nommer van die vraag neer.</p> <p>6.2 Laat 'n lyn oop en trek 'n lyn na jou antwoord.</p>

QUESTION/VRAAG 1

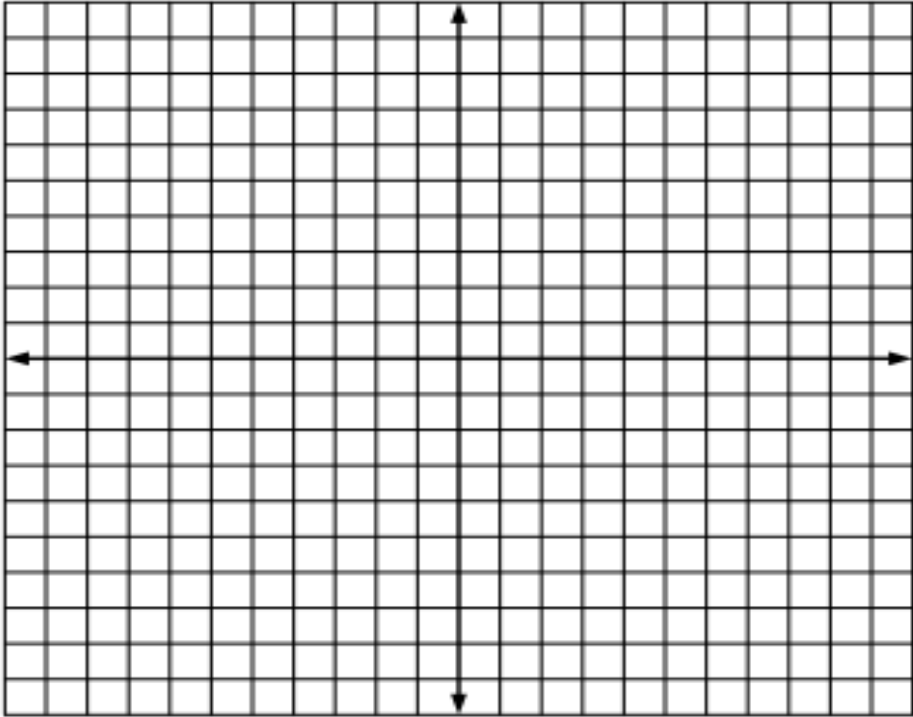
	Solution/Oplissing	Marks Punte
		
1.1	<div></div> <div></div> <div></div> <div></div> <div></div>	(2)
1.2	<div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div>	(3)

1.3		(2)
1.4		(2)
1.5		(3)
		[12]

QUESTION/VRAAG 2

	Solution/Oplissing	Marks Punte
		
2.1.1	<div style="border: 1px solid black; height: 150px; width: 100%;"></div>	
		(3)

	Solution/Oplossing	Marks Punte
2.1.2		(2)
2.1.3		(2)

	Solution/Oplissing	Marks Punte
2.2.1		
		
		(3)
2.2.2		(1)
		[11]

QUESTION/VRAAG 3

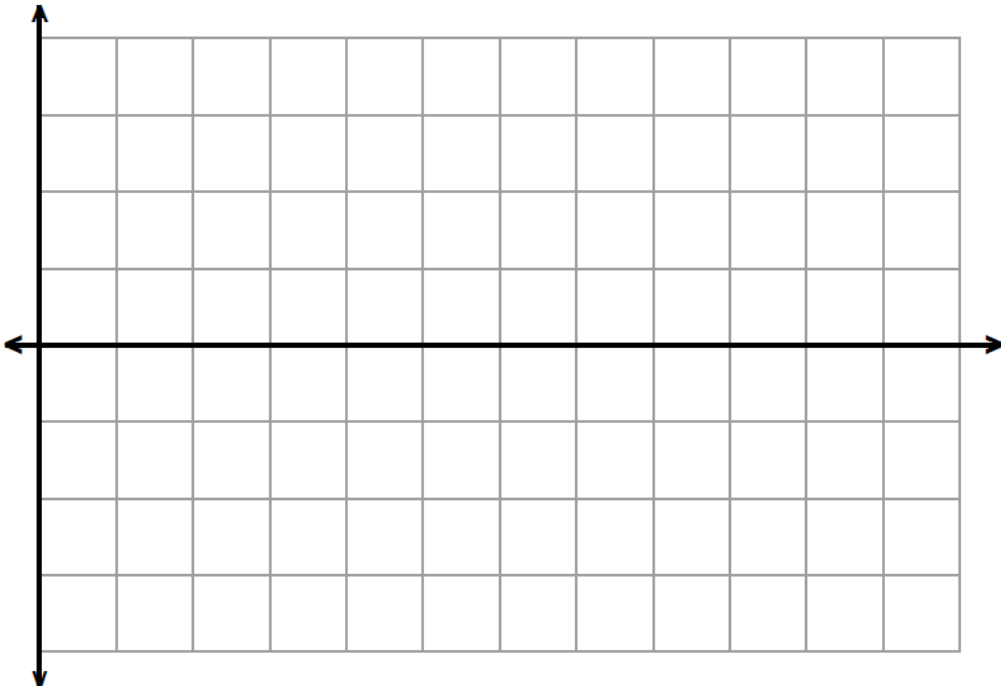
	Solution/Oplissing	Marks Punte
3.1.1		(2)
3.1.2		(3)
3.2.1		(3)
3.2.2		(1)

3.2.3		(3)
3.3		(4)
		[16]

QUESTION/VRAAG 4

	Solution/Oplissing	Marks Punte
4.1		(1)
4.2	$\frac{\cos(180^\circ + \theta) \cdot \tan(360^\circ - \theta) \cdot \cos^2(360^\circ - \theta)}{\sin(180^\circ - \theta)} + \cos^2 \theta$	(7)
4.3	$\frac{\sec \theta + \operatorname{cosec} \theta}{\sin \theta + \cos \theta} = \tan \theta + \cot \theta$	(8)
		[16]

QUESTION/VRAAG 5

5.1		(7)
5.2		(2)
5.3		(1)
5.4		(2)
		[12]

QUESTION/VRAAG 6

	Solution/Oplissing	Marks Punte
6.1		
		(2)
6.2		
		(3)
		[5]

QUESTION/VRAAG 7

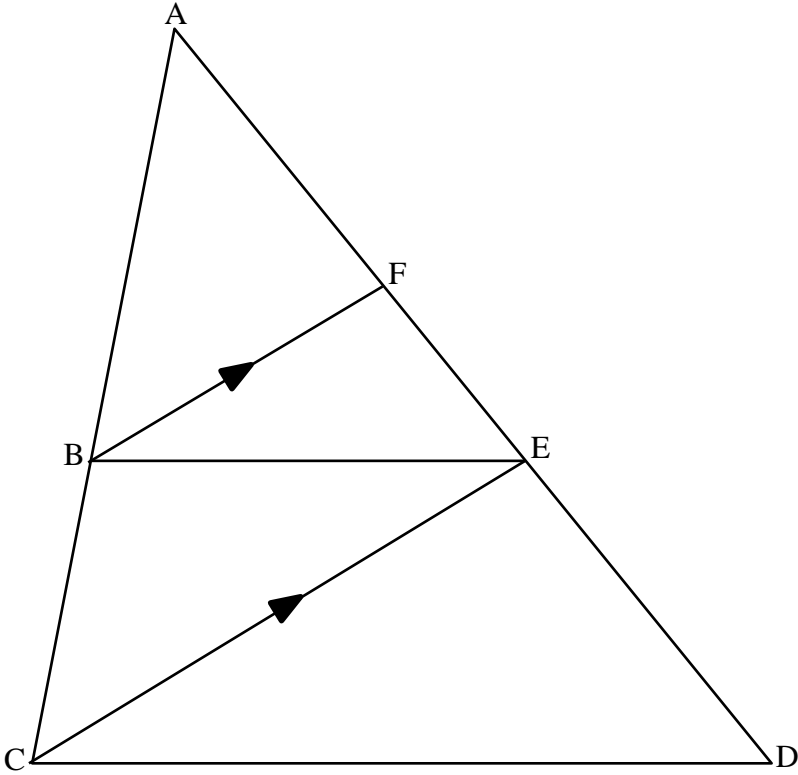
	Solution/Oplossing	Marks Punte
7.1		(1)
7.2		
7.2.1		(2)
7.2.2		(2)
7.2.3		(2)
		[7]

QUESTION/VRAAG 8

	Solution/Oplossing	Marks Punte
8.1		(1)
8.2		
8.2.1		(1)
8.2.2		(4)
8.2.3(a)		(2)

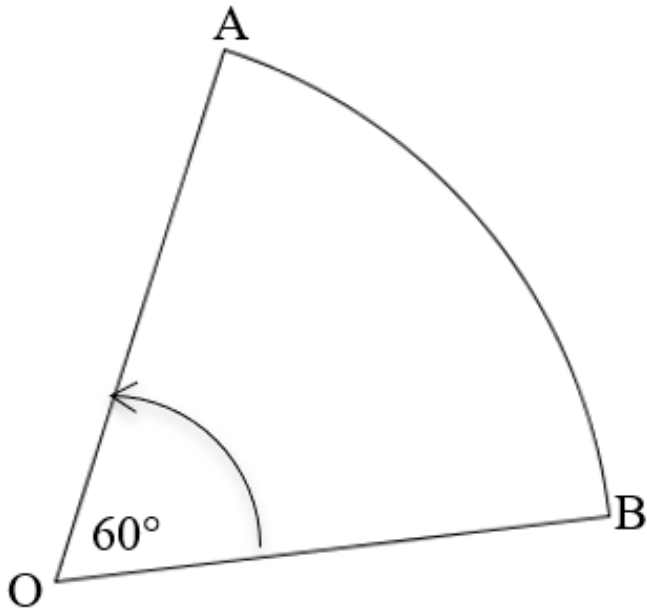
8.2.3(b)		(2)
8.2.3(c)		(2)
8.2.3(d)		(2)
		[14]


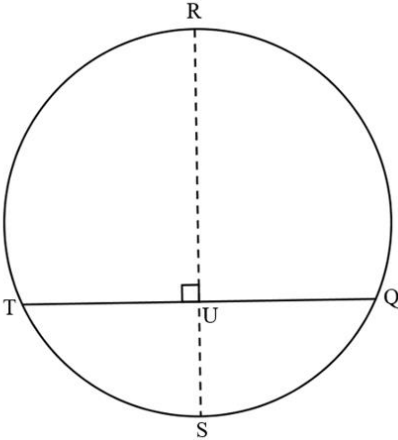
QUESTION/VRAAG 9

	Solution/Oplissing	Marks Punte
9.1		(1)
9.2		
9.2.1	<div></div> <div></div> <div></div> <div></div> <div></div>	(3)
9.2.2	<div></div> <div></div> <div></div> <div></div> <div></div>	(3)
9.3		(1)

	Solution/Oplossing	Marks Punte
9.4.2(b)		(3)
9.4.2(c)		(3)
9.4.2(d)		(2)
		[23]

QUESTION/VRAAG 10

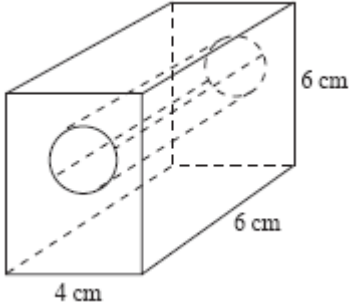
	Solution/Oplossing	Marks Punte
10.1		
10.1.1	<div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div>	(4)
10.1.2	<div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div>	(3)

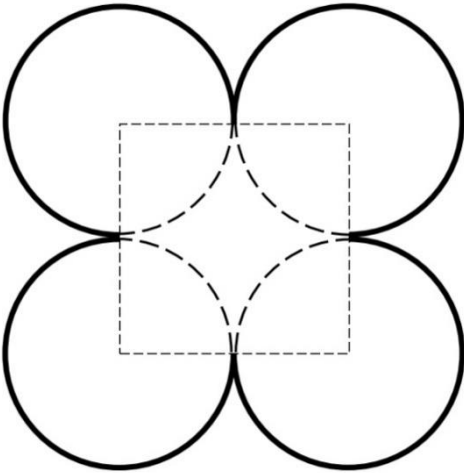
	Solution/Oplossing	Marks Punte
10.2	 	
10.2.1	<div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div>	(4)
10.2.2	<div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div>	(4)

	Solution/Oplossing	Marks Punte
10.2.3		
		(5)
		[20]

QUESTION/VRAAG 11

	Solution/Oplissing	Marks Punte
11.1	<p>Diagram description: A cross-section of a road or canal bed. The top boundary is a curve. The bottom boundary is a horizontal line. The total width of the bottom boundary is 16 m. The left vertical height is 6,2. The right vertical height is 2 m. There are two intermediate vertical lines: the first is labeled x m and the second is labeled 5,1. The curve passes through the top of these vertical lines. The area between the curve and the bottom line is shaded.</p>	
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	<div style="border: 1px solid black; height: 100px; width: 100%;"></div>	(5)

	Solution/Oplissing	Marks Punte
11.2		
		(4)

	Solution/Oplissing	Marks Punte
11.3		
		(5)
		[14]
	TOTAL/TOTAAL:	150

[illegible]

[illegible]

	Additional Space/Addisionele Ruimte	Marks Punte

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