

NOTE:

- If a candidate answers a question TWICE, only mark the FIRST attempt.
- If a candidate has crossed out an attempt of a question and not redone the question, mark the crossed out version.
- Consistent accuracy applies in ALL aspects of the marking memorandum. 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, sien die doodgetrekte poging na.
- Volgehoue akkuraatheid word in ALLE aspekte van die memorandum toegepas. Hou op nasien by die tweede berekeningsfout.
- Aanvaar van antwoorde/waardes om 'n probleem op te los, word NIE toegelaat nie.

GEOMETRY	
S	A mark for a correct statement (A statement mark is independent of a reason)
	'n Punt vir 'n korrekte bewering ('n Punt vir 'n bewering is onafhanklik van die rede)
R	A mark for the correct reason (A reason mark may only be awarded if the statement is correct)
	'n Punt vir 'n korrekte rede ('n Punt word slegs vir die rede toegeken as die bewering korrek is)
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 5

5.1	$\tan(-x) \cdot \cos x \cdot \sin(x - 180^\circ) - 1$ $= -\tan x \cdot \cos x \cdot \sin(-(180^\circ - x)) - 1$ $= \frac{-\sin x}{\cos x} \cdot \cos x \cdot (-\sin x) - 1$ $= \sin^2 x - 1$ $= -\cos^2 x$	$\checkmark -\tan x$ $\checkmark -\sin x \quad \checkmark \frac{-\sin x}{\cos x}$ $\checkmark \sin^2 x - 1$ $\checkmark \text{ answer}$ (5)
5.2.1	$\cos 215^\circ$ $= -\cos 35^\circ$ $= -m$	$\checkmark \text{ reduction}$ $\checkmark \text{ answer}$ (2)
5.2.2	$\sin 20^\circ$ $= \cos 70^\circ$ $= \cos 2(35^\circ)$ $= 2\cos^2 35^\circ - 1$ $= 2m^2 - 1$ OR $= \sin(55^\circ - 35^\circ)$ $= \sin 55^\circ \cos 35^\circ - \cos 55^\circ \sin 35^\circ$ $= m \cdot m - \sqrt{1-m^2} \cdot \sqrt{1-m^2}$ $= m^2 - (1-m^2)$ $= 2m^2 - 1$	$\checkmark \text{ co-function}$ $\checkmark \text{ double angle expansion}$ $\checkmark \text{ answer in terms of } m$ (3) $\checkmark \text{ compound angle expansion}$ $\checkmark \cos 55^\circ = \sqrt{1-m^2} \text{ or } \sin 35^\circ = \sqrt{1-m^2}$ $\checkmark \text{ answer in terms of } m$ (3)
5.3	$\cos 4x \cdot \cos x + \sin 4x \cdot \sin x = -0,7$ $\cos(4x - x) = -0,7$ $\text{ref } \angle = 45,57 \dots^\circ$ $3x = 180^\circ - 45,57 \dots^\circ + k \cdot 360^\circ \text{ or } 3x = 180^\circ + 45,57 \dots^\circ + k \cdot 360^\circ$ $3x = 134,43^\circ + k \cdot 360^\circ \text{ or } 3x = 225,57^\circ + k \cdot 360^\circ$ $x = 44,81^\circ + k \cdot 120^\circ; k \in \mathbb{Z} \quad x = 75,19^\circ + k \cdot 120^\circ; k \in \mathbb{Z}$	$\checkmark \text{ compound angle}$ $\checkmark 3x = 134,43^\circ \text{ or } 225,57^\circ$ $\checkmark x = 44,81^\circ \text{ or } 75,19^\circ$ $\checkmark + k \cdot 120^\circ; k \in \mathbb{Z}$ (4)

QUESTION/VRAAG 6

6.1	$1 - 2\sin^2 x = -\sin x$ $2\sin^2 x - \sin x - 1 = 0$ $(2\sin x + 1)(\sin x - 1) = 0$ $\sin x = -\frac{1}{2} \quad \text{or} \quad \sin x = 1$ $\text{ref } \angle = 30^\circ \quad \text{ref } \angle = 90^\circ$ $x = 210^\circ + k.360^\circ \quad x = 90^\circ + k.360^\circ$ $\text{or } x = 330^\circ + k.360^\circ$ $x = -150^\circ \text{ or } x = -30^\circ \text{ or } x = 90^\circ$ OR $\cos 2x = -\sin x$ $\cos 2x = -\cos(90^\circ - x)$ $2x = 180^\circ - (90^\circ - x) + k.360^\circ \quad \text{or} \quad 2x = 180^\circ + (90^\circ - x) + k.360^\circ$ $2x = 90^\circ + x + k.360^\circ \quad \text{or} \quad 2x = 270^\circ - x + k.360^\circ$ $x = 90^\circ + k.360^\circ \quad x = 90^\circ + k.120^\circ$ $x = -150^\circ \text{ or } x = -30^\circ \text{ or } x = 90^\circ$ OR $\cos 2x = -\sin x$ $\cos 2x = \cos(90^\circ + x)$ $2x = 90^\circ + x + k.360^\circ \quad \text{or} \quad 2x = 360^\circ - (90^\circ + x) + k.360^\circ$ $x = 90^\circ + k.360^\circ \quad \text{or} \quad 3x = 270^\circ + k.360^\circ$ $x = 90^\circ + k.120^\circ$ $x = -150^\circ \text{ or } x = -30^\circ \text{ or } x = 90^\circ$ OR $\cos 2x = -\sin x$ $\sin(90^\circ - 2x) = -\sin x$ $90^\circ - 2x = 180^\circ + x + k.360^\circ \quad \text{or} \quad 90^\circ - 2x = 360^\circ - x + k.360^\circ$ $x = -30^\circ + k.120^\circ \quad x = -270^\circ + k.360^\circ$ $x = -150^\circ \text{ or } x = -30^\circ \text{ or } x = 90^\circ$	$\checkmark$ identity $\checkmark$ factors $\checkmark \sin x = -\frac{1}{2}$ $\checkmark \sin x = 1$ $\checkmark -150^\circ \text{ and } -30^\circ$ $\checkmark 90^\circ \text{ (A)}$ (6) $\checkmark$ co-functions $\checkmark 2x$ in quadrant 2 $\checkmark 2x$ in quadrant 3 $\checkmark$ both general solutions $\checkmark -150^\circ \text{ and } -30^\circ$ $\checkmark 90^\circ \text{ (A)}$ (6) $\checkmark$ co-functions $\checkmark 2x$ in quadrant 1 $\checkmark 2x$ in quadrant 4 $\checkmark$ both general solutions $\checkmark -150^\circ \text{ and } -30^\circ$ $\checkmark 90^\circ \text{ (A)}$ (6) $\checkmark$ co-functions $\checkmark 90^\circ - 2x$ in quadrant 3 $\checkmark 90^\circ - 2x$ in quadrant 4 $\checkmark$ both general solutions $\checkmark -150^\circ \text{ and } -30^\circ$ $\checkmark 90^\circ \text{ (A)}$ (6)
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