

HOËRSKOOL HERMANUS HIGH SCHOOL



WISKUNDE / MATHEMATICS TRIGONOMETRIE/TRIGONOMETRY

GRAAD / GRADE: 10
TYD / TIME: 40 MIN
EKSAMINATOR: M VILJOEN

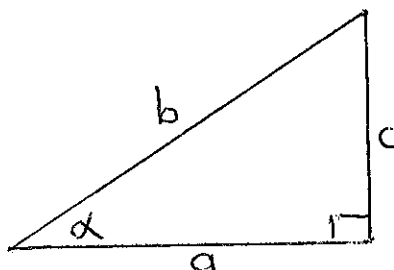
DATUM / DATE: 8 Aug 2017
PUNTE / MARKS: 30
MODERATOR: G BELLINGAN

VRAAG 1

Gebruik die volgende figuur en skryf
i. t. v. a, b, en c:

QUESTION 1

Use the following figure and write in
terms of a, b, and c:



- | | | |
|-----|---------------------------|------------|
| 1.1 | $\sin \alpha$ | [1] |
| 1.2 | $\tan(90^\circ - \alpha)$ | [1] |
| 1.3 | $\sec \alpha$ | [1] |
| | | [3] |

VRAAG 2

2.1 Bepaal, korrek tot TWEE
desimale syfers, die waarde
van:

$$\sin^2 53^\circ + \cot 41^\circ \quad [2]$$

2.2 Toon jou diagramme en bepaal
sonder die gebruik van 'n
sakrekenaar:

$$2\sin^2 60^\circ - \sin 45^\circ \cdot \sec 45^\circ \cdot \tan^2 30^\circ \quad [5]$$

2.3 Bepaal die waarde van x korrek
tot EEN desimale syfers:

$$3\sin(3x - 60^\circ) = 0,531 \quad [3]$$

QUESTION 2

2.1 Determine, correct to TWO
decimal digits, the value of:

2.2 Show your diagrams and
determine without the use of a
calculator:

2.3 Determine the value of x
correct to ONE decimal digits:

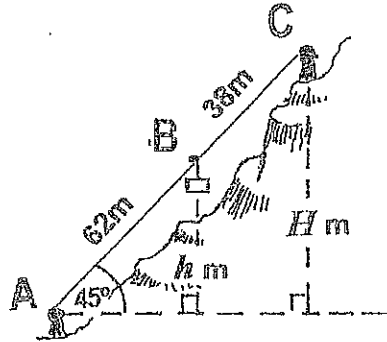
[10]

VRAAG 3

'n Kabelkar klim teen 'n hoek van 45° ten opsigte van die horisontaal. $AB = 62$ m en $BC = 38$ m. Bereken die vertikale hoogte, afgerond tot TWEE desimale syfers, wat die kabelkar bereik wanneer dit die punt

QUESTION 3

A cable car climbs at an angle of 45° to the horizontal. $AB = 62$ m and $BC = 38$ m. Calculate the vertical height, rounded off to TWO decimal digits, if the car has reached the point



- 3.1 B bereik.
- 3.2 C bereik.

- 3.1 B. [2]
 - 3.2 C. [2]
- [4]

VRAAG 4

As $4 \tan \theta - 3 = 0$ en $\cos \theta < 0$, bepaal met behulp van 'n skets en sonder 'n sakrekenaar, die waarde van: $\frac{\sin \theta}{\cos \theta}$

QUESTION 4

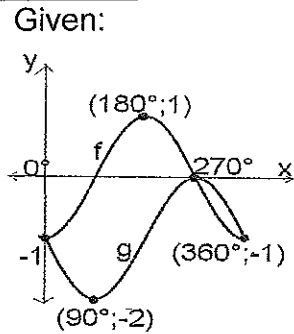
If $4 \tan \theta - 3 = 0$ and $\cos \theta < 0$, determine by using a sketch and without a calculator, the value of:

[6]

VRAAG 5

Gegee:
 $f(x) = a \cos x$
 $g(x) = b \sin x + q$

QUESTION 5



- 5.1 Bepaal die waardes van a , b en c .
- 5.2 Gee die waardeversameling van g .
- 5.3 Vir watter waardes van x sal $f(x) > g(x)$?

- 5.1 Determine the values of a , b and c . [3]
 - 5.2 Give the range of g . [2]
 - 5.3 For which values of x will $f(x) > g(x)$? [2]
- [7]

TOTAAL/TOTAL: [30]

Gr. 10 Wisk Memo Trig Toets 2017.

1.1. $\sin \alpha = \frac{c}{b}$

1.2. $\tan(90^\circ - \alpha) = \frac{a}{c}$

1.3. $\sec \alpha = \frac{b}{a}$

✓
✓
✓
(3)

2.1. $\sin^2 53^\circ + \cot 41^\circ$
 $= \sin^2 53^\circ + \frac{1}{\tan 41^\circ}$
 $= 1,79$

✓ $\frac{1}{\tan 41^\circ}$
 ✓ correctly rounded!

2.2. $2 \sin^2 60^\circ - \sin 45^\circ \cdot \sec 45^\circ \cdot \tan^2 30^\circ$
 $= 2 \left(\frac{\sqrt{3}}{2}\right)^2 - \left(\frac{1}{\sqrt{2}}\right) \left(\frac{\sqrt{2}}{1}\right) \cdot \left(\frac{1}{\sqrt{3}}\right)^2$
 $= \frac{9-2}{6} = \frac{7}{6}$

(2)
 $\frac{\sqrt{3}}{2}$ ✓
 $\frac{1}{\sqrt{2}}$ ✓ $\frac{\sqrt{2}}{1}$ ✓ $\frac{1}{\sqrt{3}}$ ✓
 ✓ ant.
 (5)

2.3. $3 \sin(3x - 60^\circ) = 0,531$
 $\sin(3x - 60^\circ) = 0,177$
 $3x - 60^\circ = \sin^{-1}(0,177)$
 $3x = 70,1950 \dots$
 $x = 23,4^\circ \rightarrow$

0,177 ✓
 $\sin^{-1}(0,177) = 10,195$
 ✓ ant.

3.1. $\frac{h}{62} = \sin 45^\circ$
 $h = 62 \sin 45^\circ = 43,84 \text{ m} \rightarrow$

(3)
 ✓ vert/ratio
 ✓ ans.

3.2. $\frac{H}{100} = \sin 45^\circ$
 $H = 100 \sin 45^\circ = 70,71 \text{ m} \rightarrow$

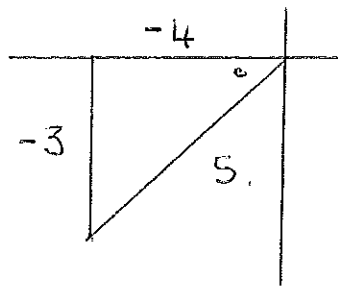
✓ vert/ratio
 ✓ ant.
 (4)

4.

$$4 \tan \theta - 3 = 0$$

$$\tan \theta = \frac{3}{4}$$

$$\cos \theta < 0$$



$$\begin{aligned} \therefore \frac{\sin \theta}{\cos \theta} &= \frac{-3}{5} \div \frac{-4}{5} \\ &= \frac{-3}{5} \times \frac{5}{-4} = \frac{3}{4} \end{aligned}$$

✓ $\tan \theta = \frac{3}{4}$

✓ kward korrek

✓ $x = -4$
✓ $y = -3$

✓ 5.

✓ subst

✓ ans.

(6).

5.1.

$$a = -1$$

$$b = -1$$

$$q = -1$$

✓

✓

✓

5.2.

$$-2 \leq y \leq 0$$

5.3.

$$0^\circ < x < 270^\circ$$

✓✓

✓✓

(7)

Total: //30//