higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NASIENRIGLYN

NASIONALE SERTIFIKAAT (BEROEPSGERIG)

WISKUNDE
(Tweede vraestel)
NKR VLAK 2

XX FEBRUARIE 2020

Hierdie nasienriglyn bestaan uit 7 bladsye.

Kopiereg voorbehou

✓ 1 punt √ ½ punt

VRAAG 1

1.1 1.1.1 Variasiewydte: Dit is die verskil tussen die hoogste✓ en die laagste✓ datawaardes in 'n datastel. (2)

1.1.2 Onverwerkte (rou) data: Dit is die oorspronklike data wat ingesamel is✓ voordat enige verwerking daarvan gedoen is.✓ (2)

1.2 1.2.1

Stingel	Blaar
1	8 9✓
2	0 3 5 5 5 9✓
3	2 2 3 4 4 5 6 7✓
4	0 2✓
5	4 5✓

(5)

1.2.2 Mediaan = $\frac{32+33}{2}$✓
= 32,5✓ (2)

1.2.3 Gemiddelde ($\bar{x}$) = $\frac{648}{20}$✓
= 32,4✓ (2)

1.2.4 Modus = 25✓ (1)

1.3 1.3.1 Variasiewydte = 49 – 2✓
= 47✓ (2)

1.3.2 2 3 3 6 10 11 11 18 26 29 32 33 35 42 42 47 49 49 (1)

1.3.3 $Q_1 = 10$✓✓

OF $Q_{1\text{stand}} = \frac{1}{4}(18+1) = 4{,}75$ ✓
$Q_1 = \frac{1}{2}(6+10) = 8$ ✓

OF $Q_{1\text{stand}} = \frac{1}{4}(18+1) = 4{,}75$ ✓
$\therefore Q_1 = 6 + 0{,}75(10-6) = 9$ ✓ (2)

1.3.4 $Q_3 = 42$✓✓

OF $Q_{3\text{stand}} = \frac{3}{4}(18+1) = 14{,}25$ ✓
$Q_3 = 42$✓ (2)

1.3.5 $IQR = Q_3 - Q_1 = 42 - 10 = 32$

OF $IQR = 42 - 8 = 34$ ✓✓

OF $IQR = 42 - 9 = 33$ ✓✓ (2)

1.3.6 $Semi - IKV = \frac{32}{2} = 16$ ✓✓

OF $Semi - IKV = \frac{34}{2} = 17$ ✓✓

OF $Semi - IKV = \frac{33}{2} = 16{,}5$ ✓✓ (2)

1.3.7 P_{40} stand $= \frac{40}{100}(18 + 1) = 7{,}6$ ✓

$P_{40} = \frac{1}{2}(11 + 18) = 14{,}5$ ✓✓

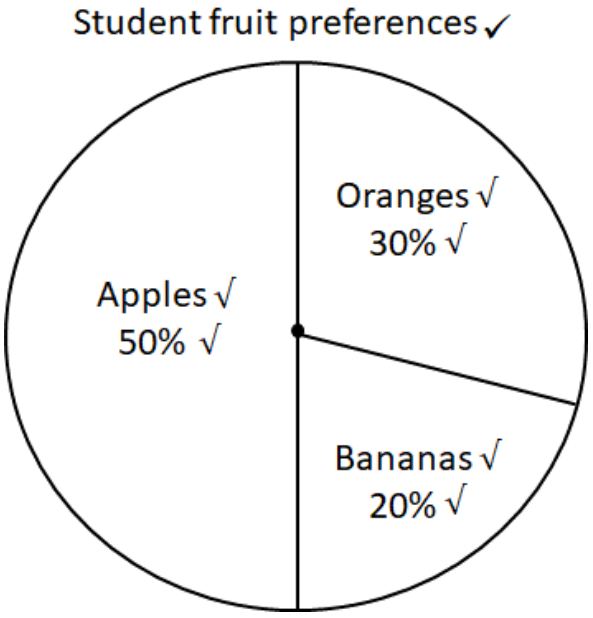
OF $P_{40} = 11 + 0{,}6(18 - 11) = 15{,}2$ ✓✓ (3)

1.4 1.4.1
1.4.2

Vrugte	Telling	Frekwensie	Frekwensie-persentasie
Appels	~~////~~ ~~////~~ ~~////~~ √	15√	50% ✓
Piesangs	~~////~~ / √	6√	20% ✓
Lemoene	~~////~~ //// / √	9√	30% ✓
Totaal		30 ✓	100%

(7)

1.4.3



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[40]

<<TRANSLATION>> Studente se vrugtevoorkeure Appels Lemoene Piesangs

2.1 2.1.1 $E(\frac{-7+5}{2};\frac{-2+2}{2})$✓
$E(-1;0)$ ✓ (2)

2.1.2 Afstand BC $= \sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$
$= \sqrt{(-3-5)^2+(6-2)^2}$
$= \sqrt{(-8)^2+(4)^2}$✓
$= \sqrt{80}$
$= 4\sqrt{5}$ of $= 8{,}944$ ✓ (3)

2.1.3 $m_{BC} = \frac{y_2-y_1}{x_2-x_1}$
$= \frac{2-6}{5+3}$ ✓ ✓
$= -\frac{4}{8}$ √
$= -\frac{1}{2}$ √ (3)

2.2 Afstand $= \sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$
$= \sqrt{(a-5)^2+(-1-3)^2}$
$5 = \sqrt{(a-5)^2+(-4)^2}$✓
$5 = \sqrt{(a-5)^2+16}$✓
$\sqrt{(a-5)^2+16} = 5$
$(a-5)^2+16 = 5^2$
$(a-5)^2 = 25-16$ ✓
$a-5 = \sqrt{9}$
$a = 3+5$
$a = 8$✓ (4)

2.3 2.3.1 $D'(-7;2)$✓✓
$E'(-2;5)$✓✓
$F'(-4;4)$✓✓ (6)

2.3.2 $E'(2;0)$ (2)

2.4 2.4.1 Refleksie om $y = x$ (1)
2.4.2 Refleksie om y-as (1)

2.5 2.5.1 $V = l^3$
$= 21^3$ ✓
$= 9\,261\ cm^3$✓ (2)

2.5.2 $SA = 6 \times l^2$
$= 6 \times 21^2$ ✓
$= 2\,646\ cm^2$✓ (2)

2.6 Volume van silinder $= \pi \times r^2 \times h$
$= \pi \times 3^2 \times 10$ ✓
$= 282{,}743 \text{ cm}^3$ √

Volume van vierkantige gat $= lbh$
$= 4 \times 4 \times 10$ ✓
$= 160$ √cm^3

Volume van staal $= 282{,}74 - 160$ √
$= 122{,}743 \text{ cm}^3$ √ (4)
[30]

3.1 3.1.1 $\cos\theta = \frac{24}{25}$

$(25)^2 = (24)^2 + y^2$ ✓
$y^2 + 576 = 625$
$y^2 = 49$
$y = 7$ ✓
$\sin\theta = \frac{7}{25}$ ✓ (3)

3.1.2 $5\cos\theta - 12\tan\theta$
$= 5\left(\frac{24}{25}\right)$ ✓ $- 12\left(\frac{7}{24}\right)$ ✓
$= \frac{24}{5} - \frac{7}{2}$
$= \frac{48 - 35}{10}$
$= \frac{13}{10}$ of 1,3 ✓ (3)

3.2 3.2.1 $\sin 37° = \frac{6{,}4}{AB}$ ✓
$AB = \frac{6{,}4}{\sin 37°}$ ✓
$AB = 10{,}634\ km$ ✓ (3)

3.2.2 $\tan 37° = \frac{6{,}4}{AC}$ ✓
$AC = \frac{6{,}4}{\tan 37°}$ ✓
$AC = 8{,}493\ km$

OF 'n alternatiewe trigonometrieverhouding kan gebruik word. (3)

OF Pythagoras se stelling kan gebruik word:

$AB^2 = AC^2 + BC^2$

$10{,}634^2 = AC^2 + 6{,}4^2$ ✓

$AC = \sqrt{10{,}634^2 - 6{,}4^2}$ ✓

$AC = 8{,}492\ km$ ✓ (3)

3.3 3.3.1 Skuinssy ✓ (1)

3.3.2 $\cos T = \frac{10}{15} = \frac{2}{3}$ ✓✓ (2)

3.3.3 $\hat{T} = \cos^{-1}\left(\frac{2}{3}\right)$ ✓

$\hat{T} = 48{,}190°$ ✓ (2)

3.3.4 $RT^2 = RS^2 + ST^2$

$15^2 = RS^2 + 10^2$ ✓

$RS = \sqrt{15^2 - 10^2}$ ✓

$RS = 5\sqrt{5}$ of $11{,}180$ eenhede ✓

OF

$\sin 48{,}190° = \frac{RS}{15}$ ✓

$RS = 15 \sin 48{,}190°$ ✓

$RS = 11{,}180$ eenhede ✓ (3)

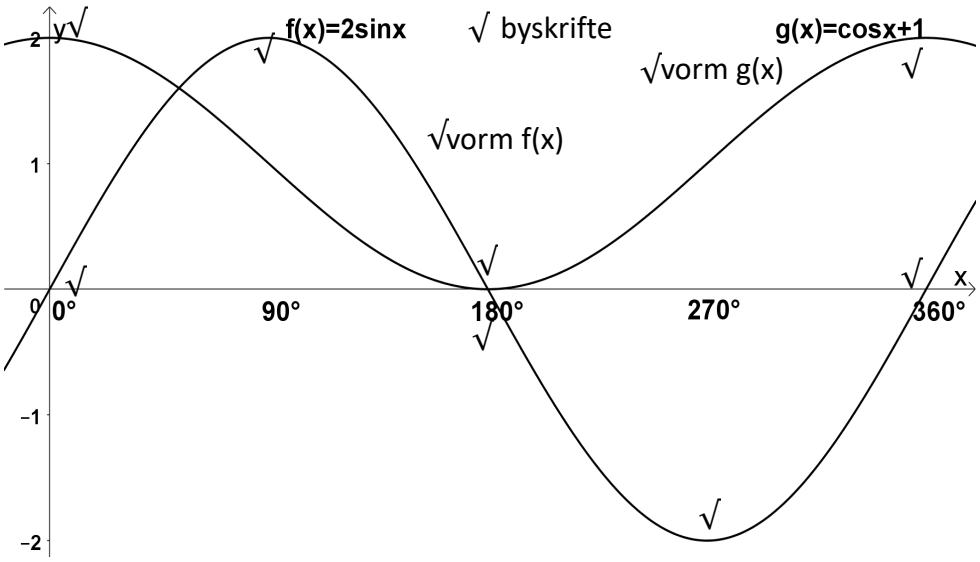
3.4 3.4.1 y ε [–2 ; 2] (2)

3.4.2

x	0°	45°	90°	135°	180°	225°	270°	315°	360°
$f(x) = 2\sin x$	0	1,4	2	1,4	0	**-1,4**	-2	-1,4	0
$g(x) = \cos x + 1$	2	1,7	1	0,3	0	**0,3**	1	1,7	2

Puntetoekenning vir tabel: Totaal van 3 punte
$^1/_2$ punt vir 3 korrekte inskrywings (insluitende gegewe waardes)

Puntetoekenning vir grafiek: 5 punte
$^1/_2$ punt vir albei byskrifte
$^1/_2$ punt vir elke grafiek se korrekte vorm
$^1/_2$ punt elk vir maksimum en minimum punte
$^1/_2$ punt elk vir as-afsnitte



(8)
[30]

TOTAAL: 100

Kopiereg voorbehou