|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | | | | |
|  | | | | | |
| **NASIONALE**  **SENIOR SERTIFIKAAT** | | | | | |
|  | | | | | |
|  | | | **GRAAD 10** |  | |
|  | | | | | |
| **NOVEMBER 2019** | | | | | |
|  | | | | | |
| **WISKUNDE V2**  **NASIENRIGLYN** | | | | | |
|  | | | | | |
| **PUNTE:** | **100** | | | | |
|  |  | | | | |
|  |  | | | | |
|  | | | | | |
|  | | Hierdie nasienriglyn bestaan uit 8 bladsye. | | |  |

**Volgehoue akkurate nasien (CA) word deurgaans in ALLE aspekte van die nasienriglyn toegepas.**

**VRAAG 1**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 48 | 50 | 52 | 59 | 60 | 68 | 73 | 76 | 76 | 76 |
| 78 | 79 | 80 | 81 | 82 | 82 | 84 | 91 | 92 | 98 |

|  |  |  |  |
| --- | --- | --- | --- |
| 1.1.1 | Mediaan = | | ✓ antwoord  (1) |
| 1.1.2 | Onderste kwartiel =  Boonste kwartiel = | | ✓ onderste kwartiel  ✓ boonste kwartiel  (2) |
| 1.1.3 | Interkwartiel-variasiewydte = Q3 – Q1  = | | ✓ vervanging ✓ antwoord  (2) |
| 1.1.4 | Min = en maks = | | ✓ min en maks  (1) |
| 1.1.5 |  | | ✓ min en maks  ✓ Q1 en Q3  ✓ Q2  (3) |
| 1.1.6 | Skeef na links of negatiewe skeefheid | | ✓ antwoord  (1) |
|  | | |  |
| 1.2 | | |  |  |  |  | | --- | --- | --- | --- | | Tydsduur (min) | Aantal oproepe (*f*1) | Middelpunt (*x*1) | *(f* 1 (*x*1) | | 2 *t* < 5 | 47 | 3,5 | 164,5 | | 5 *t* < 8 | 139 | 6,5 | 903,5 | | 8 *t* < 11 | 211 | 9,5 | 2004,5 | | 11 *t* < 14 | 102 | 12,5 | 1275 | | 14 *t* < 17 | 58 | 15,5 | 899 | | 17 *t* < 20 | 19 | **A** | **B** | |  | 576 |  | 5598 | | |
|  |  | |  |
| 1.2.1 | **A** = 18,5 en **B** = 351,5 | | ✓ antwoord A  ✓ antwoord B  (2) |
| 1.2.2 | geskatte gemiddelde =  =  =  minute | | ✓ som van  ✓som van  ✓ antwoord  (3) |
| 1.2.3 | 75ste persentiel =  In die interval 11 t < 14 | | ✓ 432  ✓ interval  (2) |
| **[17]** | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **VRAAG 2** | | |  |
|  | | | |
| 2.1 | A( – 2 ; 6 ) , B( 6 ; 8 ) en C( 4 ; 0 )    dAB **=**  **=**  **=** 2  dBC **=**  **=**  **=** 2  ∴ AB = BC. | ✓ formule  ✓ vervanging ✓ afstand AB  ✓ vervanging  ✓ afstand van BC  (5) | |
| 2.2 | ABCD is ŉ vlieër  Aanliggende sye is gelyk | ✓ vlieër  ✓ motivering  (2) | |
| 2.3 | A( – 2 ; 6 ) , B( 6 ; 8 ) en C( 4 ; 0 )  Middelpunt van BC **=**  **=**  **=** G( 2 ; 7 )  Middelpunt van AB **=**  **=  =** H( 5 ; 4 ) | ✓ formule  ✓ vervanging ✓ koördinate van   G, mdpt van BC  ✓ vervanging  ✓ koördinate van   H, mdpt van AB  (5) | |
| 2.4 | (teenoorstaande ∠’e van ŉ vlieër =)  (ooreenkomstige ∠’e , EG || DB) maar  (hoeklyne van ŉ vlieër)  ∴ =  ∴∆AEG ||| ∆CDB. (A A A) | ✓ S ✓R  ✓ SR  ✓ 3de hoek  of rede  (4) | |
|  |  | **[16]** | |

|  |  |  |  |
| --- | --- | --- | --- |
| **VRAAG 3** | | |  |
|  | | |  |
| 3.1.1 | 28  35 | | ✓sub in Pythagoras  ✓*x* = 21  ✓  (3) |
| 3.1.2 |  | | ✓  ✓  ✓ 1  (3) |
| 3.2 | | Indien  ∴  = –    – 12  θ  – 35 37 | ✓  =  ✓ 3de Kwadrant  ✓ *x* waarde = – 12  ✓✓ vervanging  ✓antwoord  (6) |
| 3.3.1 | | 8cos( *x* + ) = 5  cos( *x* + ) =  *x* +  *x* = | ✓cos( *x* +)  ✓ *x* +  ✓ antwoord  (3) |

|  |  |  |
| --- | --- | --- |
| 3.3.2 | cosec 2*x* = 2  sin 2*x* =  2*x* = 300  *x* = 150 | ✓ sin 2*x* =  ✓ 2*x* =  ✓ antwoord  (3) |
| 3.4 | = | ✓  ✓  ✓  ✓  ✓ antwoord  (5) |
| 3.5.1 | =  *x =*  *=*  **OF**  =  *x =* | ✓ gebruik  ✓ antwoord  (2)  ✓ gebruik  ✓ antwoord  (2) |
| 3.5.2 | =  *y =*  *=* 11,46  **OF**  =  *y* = 11,46  **OF**  *y* 2 = 12,292 – 4.42  *y* = 11,48 | ✓ gebruik tan  ✓ antwoord  (2)  ✓ Pythagoras  ✓ antwoord  (2) |
|  | | **[27]** |

|  |  |  |
| --- | --- | --- |
| **VRAAG 4** | |  |
| 4.1 | *f*  *g*  *x*  *y* | ✓ afsnitte  ✓ draaipunte  ✓ vorm  (3) |
| 4.2 | Periode van g = 3600 | ✓ antwoord  (1) |
| 4.3 | Waardeversameling van *m(x)* if *m(x)* = – 3*f(x)* + 1  Waardeversameling van – 3 f(x): – 3 *y* 3  Waardeversameling van *m(x)* : – 2 *y* 4 | ✓ notasie  ✓✓ eindpunte  (3) |
| 4.4 | g dalend: 900 < *x* < 2700 | ✓ notasie  ✓ eindpunte  (2) |
| 4.5 |  | ✓ notasie  ✓ eindpunte  ✓ eindpunte  (3) |
|  | | **[12]** |

|  |  |  |  |
| --- | --- | --- | --- |
| **VRAAG 5** | | |  |
|  |  | |  |
| 5.1 | (∠’e op ŉ reguit lyn)  (supplementêr aanliggende ∠’e)  (∠’e op ŉ reguit lyn )  =   =  (∠’e van ŉ vierhoek = )  Slegs antwoord: volpunte, op voorwaarde dat een rede verskaf is. | | ✓ SR  ✓SR  ✓SR  ✓ antwoord  (4) |
| 5.2 | ∴  (∠s van ŉ ∆✓ =  In ∆ ABC: *x* +  – 2*y* +  – 2*k* = 1800  2*y* + 2*k* =  y + *k* =  +  =  –  (∠’e op ŉ reguit lyn) | | ✓ SR  ✓ SR  ✓ S  ✓ SR  (4) |
|  |  | | **[8]** |
|  | | |  |
| **VRAAG 6** | | |  |
|  | | |  |
| 6.1.1 | | AP = DE en AQ = DF (gegee)  (gegee) ∆ APQ ≡ ∆ DEF (SAS) | ✓ gegee  ✓∆’e gelykvormig  ✓ rede  (3) |
| 6.1.2 | | (∆ APQ ≡ ∆ DEF)  Maar  (gegee) ∴  ∴ PQ || BC (ŉ ✓ paar ooreenkomstige ∠’e =) | ✓ Stelling  ✓ Stelling  ✓ Rede  (3) |
| 6.1.3 | | (∆ABC ||| ∆DEF)  DF =  = 3,7 | ✓ SR  ✓ vervanging  ✓ vereenvoudig  ✓ antwoord  (4) |
| 6.2.1 | | Omgekeerde van middelpuntstelling | ✓ antwoord  (1) |

|  |  |  |
| --- | --- | --- |
| 6.2.2 | BD =  ∴ AD =  ∴ EF =  (teenoorstaande sye van ‘n parallelogram)  ∴ CG = 2 (midpt stelling)    = 8 | ✓ BD = AD  ✓S✓R  ✓ SR  ✓ antwoord  (5) |
|  |  | **[16]** |
|  | |  |
| **VRAAG 7** | |  |
|  | |  |
| Buite-oppervlakte van ŉ kel = Buite-oppervlakte van hemisfeer  =  =  *s* = 2*x (*  maar *s*2 = *h*2 + *x*2  ∴ *h*2 + *x*2 = 4*x*2  ∴ *h* =  = | | ✓ stel buite-  oppervlakte = aan  mekaar  ✓ gebruik van   Pythagoras  ✓ vervanging  *s* = 2*x*  ✓ h die onderwerp   van die formule  (4) |
|  | | **[4]** |
|  | |  |
| **TOTAAL:** | | **100** |