Hierdie nasienriglyne word voorberei vir gebruik deur eksaminatore en sub-eksaminatore, almal van wie vereis word om 'n standardiseringsvergadering by te woon om te verseker dat die riglyne konsekwent geïnterpreteer en toegepas word in die nasien van kandidate se skrifte.

Die IEB sal nie enige besprekings of korrespondensie rakende die nasienriglyne aangaan nie. Dit word erken dat daar verskillende sienings oor sekere sake van belang of detail in die nasienriglyne mag wees. Dit word ook erken dat, sonder die voordeel van die bywoning van 'n standardiseringsvergadering, daar verskillende interpretaasies van die toepassing van die nasienriglyne mag wees.
LET WEL:

- Indien 'n leerder 'n vraag meer as een keer beantwoord, sien slegs die EERSTE poging na.
- Deurlopende akkuraatheid geld vir alle aspekte van die nasienmemorandum.

AFDELING A

VRAAG 1

(a)(1) \[2(-2)^2 + (-2) + k = 0\]
\[8 - 2 + k = 0\]
\[k = -6\]

(a)(2) \[2x^2 + x - 6 = 0\]
\[(2x - 3)(x + 2) = 0\]
\[\therefore \text{Ander wortel is } \frac{3}{2}\]

(b)(1) \[x - 2 = 3\sqrt{x + 2}\]
\[(x - 2)^2 = (3\sqrt{x + 2})^2\]
\[x^2 - 4x + 4 = 9(x + 2)\]
\[x^2 - 13x - 14 = 0\]
\[(x - 14)(x + 1) = 0\]
\[x = 14 \text{ of } x = -1\]
Kontroleer: \(x = -1\) is nie geldig nie

(b)(2) \[x^2 - x - 6 \leq 0\]
\[(x - 3)(x + 2) \leq 0\]
Kritieke waardes: 3; -2

Faktore/kritieke waardes
Getallelyn/graafiek
\[x \geq -2\]
\[x \leq 3\]

Faktore/korrekt vervanging van -2
\(k = -6\)

Faktore/korrekt vervang in formule
\(\frac{3}{2}\)

Isolere wortelvorm
\[x^2 - 4x + 4\]
\[9(x + 2)\]
\[x^2 - 13x - 14\]
faktore
antwoord met seleksie

Oplossing: \(-2 \leq x \leq 3\)
### VRAAG 2

<table>
<thead>
<tr>
<th>(a)</th>
<th>( A = P(1 + i)^n )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( A = 12349 \left(1 + \frac{0.123}{52}\right)^{1} )</td>
<td></td>
</tr>
<tr>
<td>( A = R12378.21 )</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(b)</th>
<th>( P = \frac{x \left[1 - (1 + i)^{-n}\right]}{i} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( 12349 = 94.75,75 \left[1 - \left(1 + \frac{0.123}{52}\right)^{-52n}\right] )</td>
<td></td>
</tr>
<tr>
<td>( 0.6917... = (1,00236...)^{-52n} )</td>
<td></td>
</tr>
<tr>
<td>( \log_{1,00236...} 0.6917... = -52n )</td>
<td></td>
</tr>
<tr>
<td>( n \approx 3 ) jaar</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(c)</th>
<th>( A = P(1 - in) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( A = 12349(1 - 0.2 \times 2) )</td>
<td></td>
</tr>
<tr>
<td>( A = 7409.40 )</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(d)</th>
<th>Saldo uitstaande = A – F</th>
</tr>
</thead>
<tbody>
<tr>
<td>( = 12349 \left(1 + \frac{0.123}{52}\right)^{2-52} - \frac{94.75 \left[\left(1 + \frac{0.123}{52}\right)^2 - 1\right]}{0.123} )</td>
<td></td>
</tr>
<tr>
<td>( = 15,788,54384 - 11,156,97628 )</td>
<td></td>
</tr>
<tr>
<td>( = R4,631,57 )</td>
<td></td>
</tr>
<tr>
<td>Verminderde bedrag = R7 409.40</td>
<td></td>
</tr>
<tr>
<td>Dus sal dit genoeg wees.</td>
<td></td>
</tr>
</tbody>
</table>

**OF**

| \( P = \frac{x \left[1 - (1 + i)^{-n}\right]}{i} \) |
| --- | --- |
| \( 94.75\left[1 - \left(1 + \frac{0.123}{52}\right)^{-52}\right] \) |
| \( P = \frac{0.123}{52} \) |
| \( P = R4,630.90 \) |
| Verminderde bedrag = R7 409.40 |
| Dus sal dit genoeg wees. |

### Gebruik korrekte formule

| \( n = 104 \) in A–F-formule |
| --- | --- |
| \( 94.75 \) |
| koers \( \frac{123}{5200} \) |
| Antwoord |
| Gevolgtrekking |

### Korrekte Py-formule

| \( 94.75 \) in P-formule |
| --- | --- |
| \( n \approx 52 \) in formule |
| koers \( \frac{123}{5200} \) |
| Antwoord |
| Gevolgtrekking |
VRAAG 3

(a)(1)
\[f'(x) = \lim_{{h \to 0}} \frac{f(x+h)-f(x)}{h}\]
\[f'(x) = \lim_{{h \to 0}} \frac{-5(x+h)^2 + (x+h) - (-5x^2 + x)}{h}\]
\[f'(x) = \lim_{{h \to 0}} \frac{-5x^2 + 2xh + h^2 + x + h + 5x^2 - x}{h}\]
\[f'(x) = \lim_{{h \to 0}} \frac{-5x^2 - 10xh - 5h^2 + x + h + 5x^2 - x}{h}\]
\[f'(x) = \lim_{{h \to 0}} \frac{h(-10x - 5h + 1)}{h}\]
\[f'(x) = \lim_{{h \to 0}} (-10x - 5h + 1)\]
\[= -10x + 1\]

OF

\[f(x+h) = -5(x+h)^2 + (x+h)\]
\[f(x+h) = -5(x^2 + 2xh + h^2) + x + h\]
\[f(x+h) = -5x^2 - 10xh - 5h^2 + x + h\]

\[f(x+h) - f(x) = -5x^2 - 10xh - 5h^2 + x + h - (-5x^2 + x)\]
\[f(x+h) - f(x) = -10xh - 5h^2 + h\]
\[f'(x) = \lim_{{h \to 0}} \frac{f(x+h)-f(x)}{h}\]
\[f'(x) = \lim_{{h \to 0}} \frac{h(-10x - 5h + 1)}{h}\]
\[f'(x) = \lim_{{h \to 0}} (-10x - 5h + 1)\]
\[= -10x + 1\]

Kwadrering en verdeling
Faktorisering
notasie
Vervang met 0 om
\(-10x + 1\) te kry

(a)(2)

By: \[x = 1, \quad f'(1) = -10(1) + 1\]
\[f'(1) = -9\]

\[\therefore\] Vergelyking van raaklyn: \[y = -9x + c\]

Vervang: \(1; -4\)
\[-4 = -9(1) + c\]
\[c = 5\]
\[\therefore y = -9x + 5\]

OF

By: \[x = 1, \quad f'(1) = -10(1) + 1\]
\[f'(1) = -9\]

Vervang: \(1; -4\)
\[y - (-4) = -9(x - 1)\]
\[\therefore y = -9x + 5\]
### (b)(1)

\[
y = \frac{x^3 + x^2}{x} \\
y = \frac{x^3}{x} + \frac{x^2}{x} \\
y = x^2 + x^2
\]

\[
\frac{dy}{dx} = 2x + \frac{1}{2}x^{-\frac{1}{2}} \\
\frac{dy}{dx} = 2x + \frac{1}{2\sqrt{x}}
\]

### (b)(2)

\[
D_x \left[ \frac{(2x - 3)(4x^2 + 6x + 9)}{(4x^2 + 6x + 9)} \right] \\
D_x (2x - 3)
\]

\[
D_x (2x - 3) = 2
\]

\[
(2x - 3)(4x^2 + 6x + 9)
\]
### Vraag 4

| (4)(a) | $T_n = a + (n - 1)d$  
$T_n = 5 + (n - 1)(4)$  
$T_n = 4n + 1$  

100 = 4n + 1  
4n = 99  
n = 24 \frac{3}{4}$  
24 pentagone  

|   | $d = 4$  
$T_n = 4n + 1$  

100 = 4n + 1  
4n = 99  
n = 24 \frac{3}{4}$  

Antwoord |

| (b)(1) | $T_1 = 3$ en $T_n = 47$  
$S_n = 300$  

$S_n = \frac{n}{2}(a + l)$  

300 = $\frac{n}{2}(3 + 47)$  
n = 12  

Korrekte formule  

300 = $\frac{n}{2}(3 + 47)$  

Antwoord |

| (b)(2) | $T_n = a + (n - 1)d$  
47 = 3 + 11d  
d = 4  

Korrekte formule  

47 = 3 + 11d  

Antwoord |

| (c) | Reeks: $\frac{1}{4} + \frac{1}{8} + \frac{1}{16} + ...$  

$r = \frac{1}{2}$, konvergerende reeks  

$S_\infty = \frac{a}{1-r}$; $-1 < r < 1$  

$S_\infty = \frac{1}{4}$  

$S_\infty = \frac{1}{1-\frac{1}{2}}$  

$S_\infty = \frac{1}{2}$  

Ontwikkeling  

$r = \frac{1}{2}$  

Korrekte formule  

Antwoord |

| (d) | $\frac{T_5}{T_3} = \frac{T_7}{T_5}$  

$\frac{4}{5p + 1} = \frac{1}{4}$  
p = 3  

Stel verhoudings gelyk  

Korrekte vervanging  

Antwoord |
### Vraag 5

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>(b)</td>
<td>(2a = -4)</td>
<td>(3a + b = 18)</td>
</tr>
<tr>
<td></td>
<td>(a = -2)</td>
<td>(3(-2) + b = 18)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(b = 24)</td>
</tr>
</tbody>
</table>

\[T_n = -2n^2 + 24n - 20\]

**OF**

\[2a = -4\]
\[a = -2\]

\[T_n = -2n^2 + bn + c\]

\[T_1: \quad -2 + b + c = 2 \quad \therefore b + c = 4 \quad \ldots \text{verg. 1}\]

\[T_2: \quad -8 + 2b + c = 20 \quad \therefore 2b + c = 28 \quad \ldots \text{verg. 2}\]

\[T_2 - T_1: \quad b = 24\]

Vervang in verg. 1: \(24 + c = 4\) \(\therefore c = -20\)

\[T_n = -2n^2 + 24n - 20\]

**OF**

\[T_n = T_2(n - 1) - T_1(n - 2) + \frac{(n - 1)(n - 2)}{2} \times (2^0 \text{ verskil})\]

\[T_n = 20(n - 1) - 2(n - 2) + \frac{(n - 1)(n - 2)}{2} \times (-4)\]

\[T_n = 20n - 20 - 2n + 4 - 2(n^2 - 3n + 2)\]

\[T_n = 20n - 20 - 2n + 4 - 2n^2 + 6n - 4\]

\[T_n = -2n^2 + 24n - 20\]
(c) \( T_n = -2n^2 + 24n - 20 \)
\( T_n = -2(n^2 - 12n + 10) \)
\( T_n = -2\left[(n - 6)^2 - 26\right] \)
\( T_n = -2(n - 6)^2 + 52 \)
Maksimum passasiers is 52

**OF**

\( T_n = -4n + 24 \)
\(-4n + 24 = 0\)
\( n = 6 \)

Vervang \( n = 6 \)
\( T_n = -2(6)^2 + 24(6) - 20 \)
\( T_6 = 52 \)
Maksimum passasiers is 52

Bepaal \( n \)
\( n = 6 \)

**Antwoord**

(d) Laat \( n = 12 \) stoppe

\( T_{12} = -2(12)^2 + 24(12) - 20 \)
\( \therefore T_{12} = -20 \)
Ongeldig vanweë negatiewe antwoord

**OF**

\(-2n^2 + 24n - 20 \geq 0\)
Passasiers moet \( \geq 0 \) wees
Kritieke waardes: \( 6 \pm \sqrt{26} \)

Dus \( 0,9 \leq n \leq 11,09 \)
| (a) | $f(x) > g(x)$ vir $0 < x < 3$ | $x > 0$  
$x < 3$ |
| (b) | $g(x) = \log_a x$ vervang (3;1)  
$1 = \log_a 3$  
$a = 3$  
$f(x) = \sqrt{kx}$ vervang (3;1)  
$1 = \sqrt{3k}$  
$(1)^2 = (\sqrt{3k})^2$  
$k = \frac{1}{3}$ | Vervanging  
Antwoord  
Vervanging  
Antwoord |
| (c) | $f: y = \frac{1}{\sqrt{3}}x$  
$f^{-1}: x = \frac{1}{\sqrt{3}}y$  
$x^2 = \frac{1}{3}y$  
y = $3x^2$ vir $x \geq 0$ | Verander $x$ en $y$  
y = $3x^2$  
Definisiegebied: $x \geq 0$ |
### VRAAG 7

#### (a)

<table>
<thead>
<tr>
<th>Vorm van f en g</th>
<th>Snyding: (1; 9)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grafiek g:</strong></td>
<td>Horisontale asimptoot (0; 1)</td>
</tr>
<tr>
<td><strong>Grafiek f:</strong></td>
<td>Horisontale asimptoot (0; 3)</td>
</tr>
</tbody>
</table>

#### (b)

\[
a^{2x} = 3^{x-1}
\]

\[
\frac{a^{2x}}{3^x} = 3
\]

\[
\left(\frac{a^2}{3}\right)^x = 3
\]

\[
\log_3 \left(\frac{1}{3^x}\right) = x
\]

**Isoleer x:** \(\frac{a^2}{3}\)

**Omskakeling na logaritmes**

**Antwoord**

\[
x = \frac{\log a^2 \cdot 3}{\log 3}
\]

\[
x = \frac{\log 3}{\log a^2 - \log 3}
\]
VRAAG 8

(a)(1) \((2x - 1)^2 \geq 0\)

(a)(2)

\[\begin{align*}
2x - 1 &= \pm \sqrt{k} \\
x &= \frac{1 \pm \sqrt{k}}{2}
\end{align*}\]

OF

\[\begin{align*}
2x - 1 &= \pm \sqrt{k} \\
x &= \frac{1 \pm \sqrt{k}}{2}
\end{align*}\]

Wortels is reëel vir \(k \geq 0\)

(a)(3) Skuif 5 eenhede af

(a)(4)

\[\begin{align*}
(2x - 1)^2 &= k \\
4x^2 - 4x + (1 - k) &= 0 \\
x &= \frac{-(-4) \pm \sqrt{(-4)^2 - 4(4)(1 - k)}}{2(4)} \\
x &= \frac{4 \pm \sqrt{16k}}{8} \\
x &= \frac{4 \pm 4\sqrt{k}}{8} \\
x &= \frac{1 \pm \sqrt{k}}{2}
\end{align*}\]

Wortels is reëel vir \(k \geq 0\)

OF

\[\begin{align*}
(2x - 1)^2 &= k \\
4x^2 - 4x + (1 - k) &= 0 \\
x &= \frac{-(-4) \pm \sqrt{(-4)^2 - 4(4)(1 - k)}}{2(4)} \\
x &= \frac{4 \pm \sqrt{16k}}{8} \\
16k \geq 0 \quad \therefore k \geq 0
\end{align*}\]

OF

\[\begin{align*}
(2x - 1)^2 &= k \\
2x - 1 &= \pm \sqrt{k} \\
x &= \frac{1 \pm \sqrt{k}}{2}
\end{align*}\]

Wortels is reëel vir \(k \geq 0\)

Vorm

Draaipunt \(\left(\frac{1}{2};5\right)\)

\(y\)-afsnit: \((0;6)\)
(a) \( y = 4x^2 - 4x + (1+k) \)

Vir reëel, ongelyk en rasionaal, \( \Delta > 0 \) en volkome vierkant

\[
\Delta = (-4)^2 - 4(4)(1+k) = -16k
\]

\[
\therefore k = -1, \quad k = -\frac{1}{4}, \quad k = -\frac{1}{16}
\]

ens.

OF

\( y = 4x^2 - 4x + (1+k) \)

Los op vir \( 4x^2 - 4x + (1+k) = 0 \) deur probeer en tref:

Wanneer \( k = -1 \): wortels is reëel, rasionaal en ongelyk

Wanneer \( k = -4 \): wortels is reëel, rasionaal en ongelyk, ens.

\( \Delta = -16k \)

akkurate waarde van \( k \)

akkurate waarde van \( k \)

akkurate waarde van \( k \)

(b) \( px^2 + qx + r = 0 \)

\[
x = \frac{-q \pm \sqrt{q^2 - 4pr}}{2p}
\]

\[
\therefore P = \frac{-q + \sqrt{q^2 - 4pr}}{2p}
\]

\[
x = \frac{-q \pm \sqrt{q^2 - 4pr}}{2}
\]

\[
\therefore Q = \frac{-q + \sqrt{q^2 - 4pr}}{2}
\]

Vir: \( P : Q \)

\[
\frac{1}{p} \left[ \frac{-q + \sqrt{q^2 - 4pr}}{2} \right] : \frac{1}{p} \left[ \frac{-q + \sqrt{q^2 - 4pr}}{2} \right]
\]

Verhouding: \( \frac{1}{p} : 1 \)

OF

Verhouding: \( 1 : p \)

\( P = \frac{-q + \sqrt{q^2 - 4pr}}{2p} \)

\( Q = \frac{-q + \sqrt{q^2 - 4pr}}{2} \)

Antwoord
**VRAAG 9**

(a)(1) \[ y = a(x - x_1)(x - x_2)(x - x_3) \]
\[ y = a(x + 3)(x + 3)\left(x - \frac{1}{2}\right) \]
Vervang: (0;9)
\[ a = -2 \]
\[ y = -2(x + 3)^2\left(x - \frac{1}{2}\right) \]
\[ y = -2\left(x - \frac{1}{2}\right)(x^2 + 6x + 9) \]
\[ y = -2\left(x^3 + 6x^2 + 9x - \frac{1}{2}x^2 - 3x - 4 \frac{1}{2}\right) \]
\[ y = -2\left(x^3 + 5 \frac{1}{2}x^2 + 6x - 4 \frac{1}{2}\right) \]
\[ y = -2x^3 - 11x^2 - 12x + 9 \]

**OF**

\[ y = a(x + 3)(x + 3)(2x - 1) \]
Vervang: (0;9)
\[ a = -1 \]
\[ y = -1(x + 3)(x + 3)(2x - 1) \]
\[ y = -1(x^2 + 6x + 9)(2x - 1) \]
\[ y = -1(2x^3 + 12x^2 + 18x - x^2 - 6x - 9) \]
\[ y = -1(2x^3 + 11x^2 + 12x - 9) \]
\[ y = -2x^3 - 11x^2 - 12x + 9 \]

(b)(2) \[ f(x) = -2x^3 - 11x^2 - 12x + 9 \]
\[ f'(x) = -6x^2 - 22x - 12 \]
\[ f''(x) = -12x - 22 \]
\[ -12x - 22 = 0 \]
\[ x = -\frac{11}{6} \]

\[ f'(x) = -6x^2 - 22x - 12 \]
\[ f''(x) = -12x - 22 \]
\[ x = -\frac{11}{6} \]

(b) \[ f'(x) = 8 \]
\[ -6x^2 - 22x - 12 = 8 \]
\[ -6x^2 - 22x - 20 = 0 \]
\[ x = -\frac{5}{3} \text{ of } x = -2 \]

\[ E(-2;5) \]
| (c) | $y = \frac{2}{x + p} + q$  
$p = 3$  
$y = \frac{2}{x + 3} + q$  
$vervang (-2;5)$  
$5 = \frac{2}{-2 + 3} + q$  
$q = 3$  
$\therefore y = \frac{2}{x + 3} + 3$ | $x + 3$  
Vervanging  
$q = 3$ |
| (d) | $y = x + 6$  
Lyn gaan deur $(-3;3)$  
$y = x + c$  
$vervang (-3;3)$  
$\therefore y = x + 6$ | $y = x$  
$y = x + 6$  
$(-3;3)$  
$y = x + 6$ |
| (e) | $(-\infty; -3) \cup [-2; 0]$  
$(-\infty; -3)$  
( )  
vanweë asimptoot  
$[-2;0]$ | $(-\infty; -3)$  
( ) |
| (f) | $h(x) - k = -2x^3 - 11x^2 - 12x + 9$  
Vir $h$: $y$-afsnit $(0;9)$  
Vir $g$: $y$-afsnit $\left(0; \frac{11}{3}\right)$  
$k < -\frac{16}{3}$ | $y$-afsnit $(0;9)$  
$y$-afsnit $\left(0; \frac{11}{3}\right)$  
$k < -\frac{16}{3}$ |
VRAAG 10

\[ V = \pi r^2 h + \frac{4}{3} \pi r^3 \]

1000 = \pi r^2 h + \frac{4}{3} \pi r^3

\[ \pi r^2 h = 1000 - \frac{4}{3} \pi r^3 \]

\[ h = \frac{1}{\pi r^2} \left( 1000 - \frac{4}{3} \pi r^3 \right) \] ....Verg. 1

Totale buiteopp (S) = Buiteopp silinder + Buiteopp sfeer

\[ S = 2\pi rh + 4\pi r^2 \] .... Vervang verg. 1

\[ S = 2\pi r \left[ \frac{1}{\pi r^2} \left( 1000 - \frac{4}{3} \pi r^3 \right) \right] + 4\pi r^2 \]

\[ S = \frac{2}{r} \left( 1000 - \frac{4}{3} \pi r^3 \right) + 4\pi r^2 \]

\[ S = 2000r^{-1} - \frac{8}{3} \pi r^2 + 4\pi r^2 \]

\[ S = 2000r^{-1} + \frac{4}{3} \pi r^2 \]

\[ \frac{dS}{dr} = -2000r^{-2} + \frac{8}{3} \pi r \]

\[ \frac{8\pi r}{3} - \frac{2000}{r^2} = 0 \]

\[ 8\pi r^3 - 6000 = 0 \]

\[ r^3 = \frac{6000}{8\pi} \]

\[ r \approx 6,2 \] vir buiteoppervlakte om 'n minimum te wees
### Vraag 11

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>
| **(a)** | \[
\frac{10!}{5!\times 2!\times 3!}
\] | \[
\frac{10!}{5!\times 2!\times 3!}
\] | \[
\frac{10!}{5!\times 2!\times 3!}
\] |
|     |          |          |          |
|     |          |          |          |
| **(b)(1)** | \[P(\text{nie gepluk nie}) = 0,3 \times 0,65\] | \[0,3 \text{ en } 0,65\] | \[0,3 \text{ en } 0,65\] |
|     |          |          |          |
|     |          |          |          |
| **(b)(2)** | \[P(\text{verwerk tot sap})\] | \[\text{Dui } 0,6 \text{ of } 60\% \text{ aan}\] | \[\text{Dui } 0,6 \text{ of } 60\% \text{ aan}\] |
|     |          |          |          |
|     |          |          |          |
|     | \[= (0,7 \times 0,6) + (0,3 \times 0,35 \times 0,6)\] | \[= (0,7 \times 0,6)\] | \[= (0,7 \times 0,6)\] |
|     | \[= 0,483\] | \[= (0,3 \times 0,35 \times 0,6)\] | \[= 0,483\] |
|     | \[\therefore \text{ Ongeveer } 48,3\% \text{ sal tot sap verwerk word}\] | \[\text{OF}\] | \[\text{OF}\] |

\[P(\text{verwerk tot sap})\]
(b)(3) \[ \text{Getal lemoene uitgevoer} \]
\[ = 120 \times 172 \]
\[ = 20 640 \]
\[ P(\text{uitgevoer}) \]
\[ = (0,7 \times 0,09) + (0,3 \times 0,35 \times 0,09) \]
\[ = 0,07245 \]
\[ \therefore 7,245\% \text{ uitgevoer} \]

Laat getal lemoene = \( x \)
\[ \frac{20 640}{x} \times 100 = 7,245 \]
\[ \therefore x = 284 886 \text{ lemoene in totaal} \]

\textbf{OF}

Getal lemoene uitgevoer
\[ = 120 \times 172 \]
\[ = 20 640 \]
\[ P(\text{uitgevoer}) \]
\[ = (1 - 0,195) \times 0,09 \]
\[ = 0,07245 \]
\[ \therefore 7,245\% \text{ uitgevoer} \]

Laat getal lemoene = \( x \)
\[ \frac{20 640}{x} \times 100 = 7,245 \]
\[ \therefore x = 284 886 \text{ lemoene in totaal} \]

\textbf{Antwoord}

\textbf{Totaal: 150 punte}