ST = 0

Memo Gr 11 V1 Nov 2015

Vraag 1

1.1.1 $2x(x-3) = 20$ mort ✓
$2x^2 - 6x - 20 = 0$ ✓
$x^2 - 3x - 10 = 0$ ✓
$(x-5)(x+2) = 0$ ✓
$x = 5$ ✓ of $x = -2$ ✓

Standaardvorm ✓
faktore ✓
antwoorde ✓ (4)

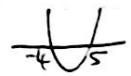
1.1.2 $2x^2 - 7x = 14$
$2x^2 - 7x - 14 = 0$ ✓
$x = \frac{-(-7) \pm \sqrt{(-7)^2 - 4(2)(-14)}}{2(2)}$ ✓
$x = 4{,}92$ ✓ of $x = -1{,}42$ ✓

Standaardvorm ✓
instelling ✓
antwoorde ✓ (4)

1.1.3 $\sqrt{2-x} = x + 4$
$2 - x = x^2 + 8x + 16$ ✓
$x^2 + 9x + 14 = 0$ ✓
$(x+2)(x+7) = 0$ ✓
$x = -2$ of $x \neq -7$ ✓

kwadreer beide kante ✓
Standaardvorm ✓
faktore ✓
antwoorde ✓ (5)

1.2 $x^2 - x < 20$
$x^2 - x - 20 < 0$ ✓
$(x-5)(x+4) < 0$ ✓
$-4 < x < 5$ ✓✓
$\therefore -3 - 2 - 1 + 0 + 1 + 2 + 3 + 4$
$= 4$ ✓



Standaardvorm ✓
faktore ✓
nulpunte, notasie ✓
slegs antwoord: beide punte ✓ (5)

1.3 $y - 8x = 9$ $\quad y = -x^2 + 4x + 5$
$y = 8x + 9$ ✓

$8x + 9 = -x^2 + 4x + 5$ ✓
$0 = x^2 + 4x + 4$ ✓
$0 = (x+2)(x+2)$ ✓
$x = -2$ ✓

$y = 8(-2) + 9$
$y = -7$ ✓

~~Standaardvorm~~ ✓
- y onderwerp van formule
- stel gelyk aan mekaar ✓
- Standaardvorm ✓
- faktore ✓
- antwoord vir x ✓
- antw. vir y ✓ (6)

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Vraag 2

2.1 $\dfrac{2^{x+1}+2^{x+1}}{5.10^x}$

$= \dfrac{2^x(2^{-1}+2)}{5.2^x.5^x}$ ✓ ✓ — faktoriseer teller ✓

$= \dfrac{\frac{1}{2}+2}{5.5^x}$ ✓ — breek noemer op ✓

$= \dfrac{\frac{5}{2}}{5.5^x}$ ✓ — vereenvoudig ✓

$= \dfrac{1}{2.5^x}$ — eksponentwet ✓

$= \dfrac{5^{-x}}{2}$ ✓ — antwoord ✓

$= \dfrac{10m}{2}$ ✓

$= 5m$ ✓ (5)

2.2 $f(g(9)) = \sqrt{4(9)^2}$ ✓ — instelling ✓

$= 18$ ✓ — antwoord ✓ (2)

2.3 $\sqrt{2}\sqrt[3]{3} = \sqrt[6]{72}$ — pre apart van begin af = $\frac{3}{4}$

RK: $\sqrt[6]{72}$

$= 72^{\frac{1}{6}}$ ✓ — eksponentwet ✓

$= (2^3.3^2)^{\frac{1}{6}}$ ✓ — priemfaktore ✓

$= 2^{\frac{1}{2}}.3^{\frac{1}{3}}$ ✓ — inmaal van haakies ✓

$= \sqrt{2}\sqrt[3]{3}$ ✓ — antwoord ✓

$\therefore LK = RK$ (4)

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Vraag 3

3.1 ✓ ✓ — antwoord ✓ (2)

3.1.1 23, 19, ✓

3.1.2 $T_{10} = 23 - 4(9)$ ✓ — instelling ✓

$= -13$ ✓ — antwoord ✓ (2)

3.1.3 $-37 = 23 - 4n + 4$ ✓ — instelling ✓

$4n = 27 + 37$

$4n = 64$ — vereenvoudig ✓

$n = 16$ ✓ — antwoord ✓ (2)

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3.2.1 2, 6, 12, 20, 30

4, 6, 8, 12

2, 2, 2 ✓

Kwadraties, konstante 2de verskil van 2 ✓ — antwoord ✓ rede (2)

3.2.2 $2a = 2$

$a = 1$ ✓

$3a+b = 4$

$3+b = 4$

$b = 1$ ✓

$a+b+c = 2$

$1+1+c = 2$

$c = 0$ ✓

$\therefore T_n = n^2 + n$ ✓

a ✓
b ✓
c ✓
T_n ✓ (4) [6]

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Vraag 4

4.1 124 ✓ antwoord (1)

4.2 $T_n = -8n + 164$ ✓ ✓ $-8n$ ✓ 164 ✓ (2)

4.3 $-8n + 164 < 0$ ✓ ($= 0$ 20,5; $= -1$ 20,125 volpunte) ongelykheid ✓

$-8n < -164$

$n > 20,5$ ✓ $n > 20,5$ ✓

antwoord ✓ (3)

$\therefore n = 21$ ✓

4.4 -764

-600 -444 -296 -156 -24

164 156 148 140 132

-8 -8 -8

mf

$2a = -8$

$a = -4$ ✓ a ✓

$3a + b = 156$ b ✓

$3(-4) + b = 156$ instelling ✓

$b = 168$ ✓ c

T_n ✓

$T_n = an^2 + bn + c$

$-24 = -4(5)^2 + 168(5) + c$ ✓

$c = -764$ ✓

$T_n = -4n^2 + 168n - 764$ ✓ (5)

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Vraag 5

5.1 A (0,12) ✓ A se koordinaat: (0,12) ✓

$-2x^2 - 2x + 12 = 0$ ✓ Standaardvorm ✓

$x^2 + x - 6 = 0$

$(x+3)(x-2) = 0$ ✓ faktore ✓

$x = -3$ of $x = 2$

$\therefore B(-3,0)$ ✓ $C(2,0)$ ✓ Koordinatevorm: B en C ✓ ✓ (5)

5.2 $y = mx + c$ ✓

$y = +4x + 12$ ✓ gradient: 4 ✓

y-afsnit: 12 (2)

5.3 $x = -\frac{b}{2a}$ ✓ instelling ✓

$= \frac{-(-2)}{2(-2)}$ ✓ antwoord ✓

$= -\frac{1}{2}$ ✓ SLEGS VANTU: volpunte ✓

$y = -2\left(-\frac{1}{2}\right)^2 - 2\left(-\frac{1}{2}\right) + 12$

$y = 12\frac{1}{2}$

$\therefore D\left(-\frac{1}{2}; 12\frac{1}{2}\right)$ ✓ ✓ (-1) vir interkoordinant koördinaat (4)

of $y = -2[x^2 + x - 6]$

$y = -2\left[x^2 + x + \frac{1}{4} - 6 - \frac{1}{4}\right]$ ✓

$y = -2\left[\left(x + \frac{1}{2}\right)^2 - 6\frac{1}{4}\right]$

$y = -2\left[x + \frac{1}{2}\right)^2 + 12\frac{1}{2}$ ✓

$\left(-\frac{1}{2}; 12\frac{1}{2}\right)$ ✓

5.4 $EF = -2x^2 - 2x + 12 - (4x + 12)$ ✓ parabool ✓ lyn ✓ antwoord (2)

$EF = -2x^2 - 2x + 12 - 4x - 12$

$EF = -2x^2 - 6x$ ✓

5.5

5.5.1 $-3 \leq x \leq 0$ ✓ eindpunte ✓ notasie ✓ (2)

5.5.2 $0 < x < 2$ of $x < -3$ ✓ ✓ ✓ eindpunte ✓ notasie ✓ 0 -3 2 (3)

5.6 $y \leq 12\frac{1}{2}$ ✓ (1)

5.7 $-p > 12\frac{1}{2}$ ✓ $\Delta < 0$ ✓

$p < -12\frac{1}{2}$ ✓ antw ✓ (2)

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Vraag 6

6.1 $y = a(x - x_1)(x - x_2)$ ✓ Mea: (-1) geen punt ingestel (-1)

$y = a(x - 3)(x + 1)$ ✓

$-3 = a(0 - 3)(0 + 1)$ ✓ instelling van x-afsnitte ✓

$-3 = -3a$ ✓ instelling ✓

$a = 1$ ✓ antwoord ✓

$y = 1(x - 3)(x + 1)$ ✓

$y = x^2 - 2x - 3$ ✓ (2/4) vergelyking ✓ (4)

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Vraag 7

7.1 $x \neq 1$; $x \in \mathbb{R}$ (2)

7.2 $x = 1$; $y = -1$ (2)

7.3 y-afsnit: $y = \frac{4}{0-1} - 1$ ✓ ✓ $x = 0$ ✓

$y = -5$ ✓ of $(0, -5)$ antw ✓

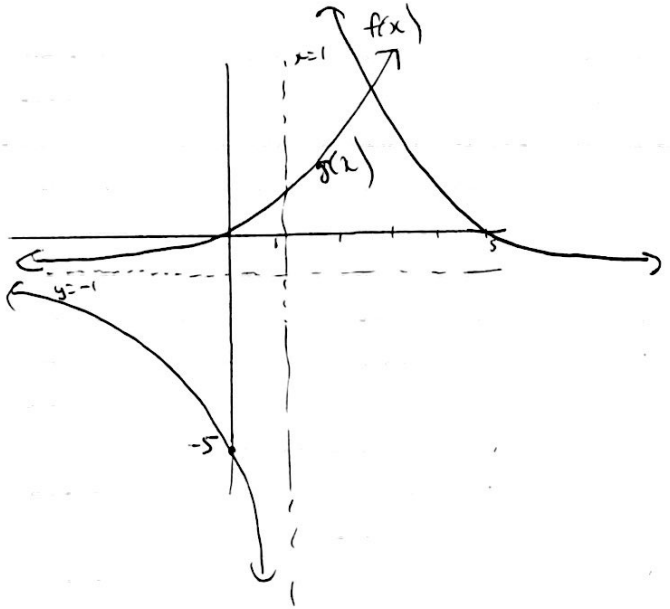
x-afsnit: $0 = \frac{4}{x-1} - 1$ ✓ $y = 0$ ✓ antw ✓

$0 = 4 - (x - 1)$

$0 = 4 - x + 1$

$x = 5$ ✓ of $(5, 0)$ (4)

7.4



7.5 g(x)
asimpt ✓
y-afsnit ✓
vorm ✓

f(x)
asimpt ✓
x-afsnit ✓
y-afsnit ✓
vorm ✓ (4) (3)

7.6 h(x) skuif 1 eenheid af ✓ 1 ✓ af ✓ (2)

7.7 $g(\frac{3}{4}) = 2^{\frac{3}{4}} - 1$ ✓ subst
$= 0,682$ ✓ afronding. antwoord ✓ afronding ✓ (2)

7.8 $7 = 2^x - 1$ ✓ instelling ✓
$8 = 2^x$
$x = 3$ ✓ antwoord ✓ (2)

7.9 $y = -(x-1)-1$
$y = -x+1-1$
$y = -x$ ✓✓

$-x$ ✓ 0 ✓
stegs antw ✓ volpunte ✓ (2)

7.10 $-g(x) = -2^x + 1$ ✓✓ (2)

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Vraag 8

8.1 $A = P(1 - i \times n)$ ✓ + ✓ punt ✓ subst ✓✓
$500 = P(1 - 0,092 \times 10)$ ✓
$P = 6250$ ✓

$A = 500$ ✓
$i = 0,092$ ✓
$n = 10$ ✓
antw ✓ (4)

8.2.1 $\frac{15}{12}$ ✓
$= 1,25\%$ ✓ per maand

antw ✓ (1)

8.2.2 $1 + i_{eff} = (1 + \frac{i_{nom}}{m})^m$ ✓
$1 + i_{eff} = (1 + \frac{\frac{15}{100}}{12})^{12}$ ✓

$\frac{15}{100}$ ✓
12 ✓

$i_{eff} = (1 + \frac{\frac{15}{100}}{12})^{12} - 1$

$= 0,16075$
$r = 16,08\%$ ✓

antw ✓ (3)

8.2.3 $A = P(1+i)^n$ ✓
$= 2500(1 + \frac{\frac{15}{100}}{12})^{84}$ ✓

$= 7097,78$ ✓

$\frac{15}{100}$ ✓
12
84 ✓
antw ✓ (3)

8.3 $A = 18000\left(1+\frac{0,12}{2}\right)^{4}\left(1+\frac{0,10}{4}\right)^{20}$ ✓ ✓ ✓

$= 37236,88$ ✓

✓✓(-)per fout (5)

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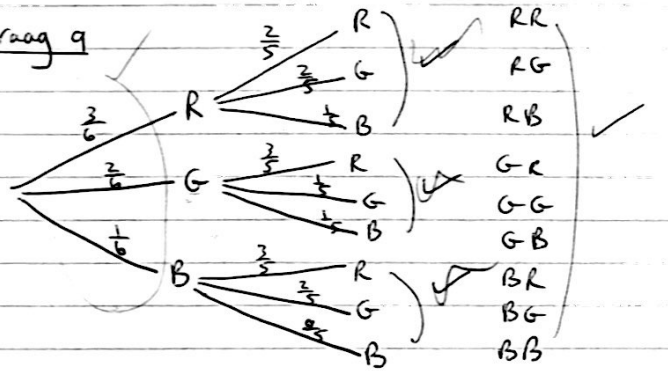
Vraag 9

9.1

9.1.1



1ste tak ✓
2de tak ✓
3de tak ✓
uitkomste ✓ (4)

9.1.2 $P(\text{geen rooi bal}) = \frac{1}{15}+\frac{1}{15}+\frac{1}{15}$ ✓

$= \frac{3}{15}$

$= \frac{1}{5}$ ✓ (2)

Slegs antw: volpunt

9.2.1 $P(A \cup B) = P(A) + P(B) - P(A \cap B)$ ✓

$0,65 = 0,3 + 0,5 - P(A \cap B)$ ✓

$P(A \cap B) = 0,15$ ✓ $\frac{3}{20}$

formule ✓
instelling ✓
antwoord ✓ (3)

9.2.2 $P(A) \times P(B) = 0,3 \times 0,5$ ✓

$= 0,15$

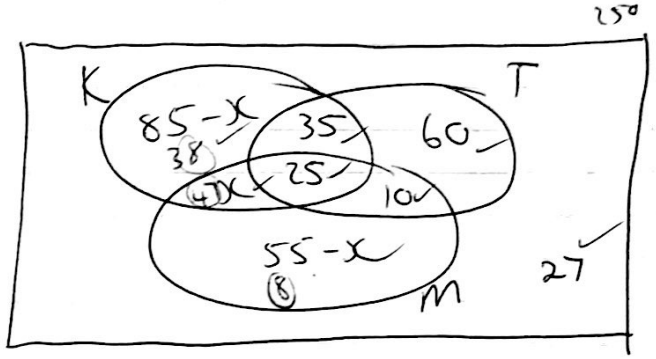
$P(A \cap B) = 0,15$ ✓

$\therefore$ A en B is onafhanklik ✓ (3)

LK ✓
RK ✓
onafhanklik

9.3

9.3.1



$25 + x + 35 + 10 + 85 - x + 55 - x + 60 + 27 = 250$ ✓

$x = 47$ ✓ (10)

9.3.2 $P(\text{koffie en nie tee}) = \frac{85}{250}$ ✓

$= \frac{17}{50}$ ✓

teller ✓
noemer ✓ (2)

9.3.3 $P(T|K) = \frac{60}{145}$

$= \frac{12}{29}$ ✓ moet verenv wees. (1)

9.3.4 $n(M \cap T') = 55$ ✓ (1)

[Totaal: 150]