

# Memorandum

Gf 12 Sept V1

1.11  $x-4=12$   
 $\frac{x}{x}$

$$x^2 - 4x - 12 = 0 \quad \checkmark$$

$$(x-6)(x+2) = 0 \quad \checkmark$$

$$x = 6 \text{ of } -2 \quad \checkmark$$

(3)

standaardvorm  $\checkmark$

faktore  $\checkmark$

wortels  $\checkmark$

1.12

$$(x^2 - 2)(x + 3) = x^3 + 6x$$

$$x^3 + 3x^2 - 2x - 6 = x^3 + 6x$$

$$3x^2 - 8x - 6 = 0 \quad \checkmark$$

$$x = \frac{-(-8) \pm \sqrt{(-8)^2 - 4(3)(-6)}}{2(3)} \quad \checkmark$$

$$= 3,28 \text{ of } -0,61 \quad \checkmark \quad \checkmark$$

(4)

standaardvorm  $\checkmark$

subst  $\checkmark$

elke wortel  $\checkmark$

1.13  $(\sqrt{x-1}-3)(\sqrt{x-1}+2) = 0$

of

$$\sqrt{x-1} = 3 \quad \checkmark \text{ of } \sqrt{x-1} = -2 \quad \checkmark$$

onmoontlik

$$x^2 - 15x + 50 = 0$$

$$(x-5)(x-10) = 0$$

$$x-1 = 9$$

$$x = 10 \quad \checkmark$$

$$\sqrt{x}=5 \text{ of } x=10$$

(3)

$\sqrt{x-1} = -2$  onmoontlik

$$\sqrt{x-1} = 3 \quad \checkmark$$

$$x = 10 \quad \checkmark$$

1.2  $(m-3)^2 - 4(2)(8) < 0 \quad \checkmark$

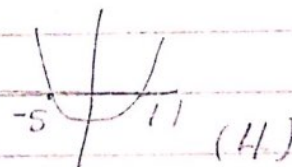
$$\Delta < 0 \quad \checkmark$$

$$(m-3)^2 < 64 \text{ of } m^2 - 6m - 55 < 0$$

$$(m-3)^2 < \pm 8 \quad (m-11)(m+5) < 0 \quad \checkmark$$

$$m = 11 \text{ of } m = -5 \quad \checkmark$$

$$-5 < m < 11 \quad \checkmark$$



(4)

faktore  $\checkmark$

m-waardes  $\checkmark$

notasie  $\checkmark$

1.3  $x = 1 + 3y$   $-2y(1+3y) + 9y^2 = 17 - (1+3y)^2$   $x = 1 + 3y$  ✓  
 ✓ subst ✓

$-2y - 6y^2 + 9y^2 = 17 - (1 + 6y + 9y^2)$   
 $-2y - 6y^2 + 9y^2 = 17 - 1 - 6y - 9y^2$   
 $12y^2 + 4y - 16 = 0$  ✓  
 $3y^2 + y - 4 = 0$  ✓

$(3y + 4)(y - 1) = 0$  ✓  
 $y = -4/3$  or  $1$  ✓  
 $x = -3$  or  $4$  ✓ (6)

formule!  
 $x \rightarrow y$

standardform ✓  
 ✓ faktoriz. ✓  
 ✓ y-waardes ✓  
 ✓ x-waardes ✓

1.4  $\sqrt{\frac{x^{2016}}{x^{2015} + x^{2012}}}$

$= \sqrt{\frac{x^{2016}}{x^{2012}(x^3 + 1)}}$  ✓

$= \frac{x^{1008}}{x^{1006}} \sqrt{\frac{1}{x^3 + 1}}$  ✓  $\sqrt{\frac{x^4}{x^3 + 1}}$  ✓

$= \sqrt{x^2} \cdot \sqrt{\frac{1}{x^3 + 1}}$  ✓  $= \sqrt{\frac{2^4}{2^3 + 1}}$  ✓

$= 2^2 \cdot \sqrt{\frac{1}{9}}$  ✓

$= 2^2 \left(\frac{1}{3}\right) = \frac{4}{3}$  ✓

(4)

faktoriseer ✓  
 $x^2$  ✓  
 subst 2 ✓  
 antw ✓

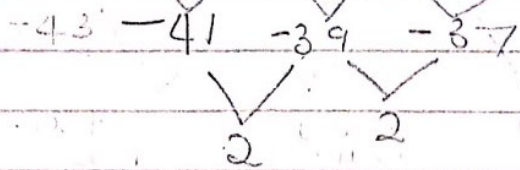
of  $\sqrt{\frac{x^{2016}}{x^{2012}(x^3 + 1)}}$  ✓ [24] faktoriseer ✓

$= \sqrt{\frac{x^4}{x^3 + 1}}$

$= \frac{x^2}{\sqrt{x^3 + 1}} = \frac{2^2}{\sqrt{2^3 + 1}}$  ✓  $x^2$  ✓

$= \frac{4}{\sqrt{9}} = \frac{4}{3}$  ✓  
 (4) ✓  
 subst 2 ✓  
 antw ✓

21) 440; 399; 360; 323



$$2a = 2$$

$$a = 1 \checkmark$$

$$c = 483 \checkmark$$

$$a + b + c = 440$$

$$1 + b + 483 = 440$$

$$b = -44 \checkmark$$

$$T_n = n^2 - 44n + 483 \checkmark \quad (4)$$

$$x^2 - 44x + 483 \text{ (reg)}$$

\* 0

$$2.2.1) \frac{2x-1}{3} - \frac{3x-1}{4} = \frac{4(2x-1) - 3(3x-1)}{12}$$

$$= \frac{8x-4-9x+3}{12} = \frac{-x-1}{12} \checkmark$$

$$\frac{7x-5}{12} - \frac{2x-1}{3} = \frac{7x-5-4(2x-1)}{12}$$

$$= \frac{7x-5-8x+4}{12} = \frac{-x-1}{12} \checkmark$$

18te verskille dieselfde. !, KR. (4)

$$2.2.2) \frac{7}{2}; 3; \frac{5}{2} \checkmark$$

(.1.)

3 terme  $\checkmark$

$$2.2.3) -\frac{1}{2}n + 4 = -44,5$$

$$-\frac{1}{2}n = -48,5$$

$$n = 97 \checkmark$$

(3)

$$T_n = -\frac{1}{2}n$$

$$+ 4 \checkmark$$

$$n = 97 \checkmark$$

$$2.3 \quad 7x+1; 2x+2; x-1$$

$$\frac{x-1}{2x+2} = \frac{2x+2}{7x+1} \quad \checkmark$$

$$\frac{T_2}{T_1} = \frac{T_3}{T_2} \quad \checkmark$$

$$4x^2 + 8x + 4 = 7x^2 - 6x - 1$$

$$3x^2 - 14x - 5 = 0 \quad \checkmark$$

$$(x-5)(3x+1) = 0 \quad \checkmark$$

$$x = 5 \text{ of } -\frac{1}{3} \quad \checkmark$$

Standaardvorm  $\checkmark$

factore  $\checkmark$

$x$  waarden  $\checkmark$

$$\text{As } x=5 \quad r = \frac{4}{12} = \frac{1}{3}$$

$$\text{As } x = -\frac{1}{3} \quad r = -1$$

$$\therefore x = 5 \quad \checkmark$$

toets en  
gevolgtrekking

(5)

[17]

3.1 Geen negatief, MR reeks  $r = \frac{1}{2}$  ✓  
dus alles positief (1)

verduideliking ✓

$$\begin{aligned} T_{15} &= ar^n \\ &= 5 \left(\frac{1}{2}\right)^{14} \quad \checkmark \\ &= \frac{5}{16384} \quad \checkmark \end{aligned}$$

(2)

subst ✓

antw ✓

$$\begin{aligned} S_{\infty} &= \frac{a}{1-r} = \frac{5}{1-\frac{1}{2}} = 10 \quad \checkmark \\ S_{10} &= \frac{a(1-r^{10})}{1-r} \end{aligned}$$

Subst  $a, r$  ✓

$$= \frac{5(1-\frac{1}{2}^{10})}{1-\frac{1}{2}} = \frac{5115}{512}$$

Subst  $a, r, n$  ✓

$$S_{\infty} - S_{10} = \frac{5}{512} \quad \checkmark \checkmark \quad (4)$$

antw ✓ ✓

[7]

$$4.1 \quad A = p(1-i)^n$$

$$90000 = 250000 \left(1 - \frac{7.5}{100}\right)^n \checkmark$$

$$\left(\frac{37}{40}\right)^n = \frac{9}{25}$$

$$n = \log_{\frac{37}{40}} \frac{9}{25} \checkmark$$

$$= 13,10 \text{ jaar. } \checkmark$$

(3)

subst  $A, P, i$   
in rechte formule  $\checkmark$

$\checkmark$  rechte y-axis  
van logs

$\checkmark$  ant.

$$4.2.1 \quad F = \frac{x[(1+i)^n - 1]}{i}$$

$$= \frac{2500 \left[ \left(1 + \frac{8}{1200}\right)^{61} - 1 \right]}{\frac{8}{1200}} \checkmark$$

$$= R187416,75 \checkmark \checkmark$$

(4)

subst  $x, i$   
subst  $n$   
in rechte formule  $\checkmark$

antw.  $\checkmark \checkmark$

$$4.2.2 \quad A = 187416,75 \left(1 + \frac{8}{1200}\right)^6 \checkmark$$

$$= R195039,48 \checkmark$$

(2)

$\checkmark$  subst.

$\checkmark$  antw.

$$4.3.1 \quad A = 450000 \left(1 + \frac{16}{1200}\right)^{238} \checkmark$$

$$= R462080 \checkmark$$

(2)

subst.

antw.  $\checkmark$

$$4.3.2 \quad P = \frac{x[1 - (1+i)^{-n}]}{i}$$

$$462080 = \frac{x \left[ 1 - \left(1 + \frac{16}{1200}\right)^{-238} \right]}{\frac{16}{1200}}$$

$$= R6436,22$$

(4)

subst.  $n$   
subst.  $P, i$   $\checkmark$

antw.  $\checkmark \checkmark$

[15]

$$5.1 \quad y = a(x-1)^2 - 4 \quad \checkmark$$

$$(0; -3) \quad -3 = a(0-1)^2 - 4 \quad \checkmark$$

$$a = 1 \quad \checkmark$$

$$y = (x-1)^2 - 4$$

$$= x^2 - 2x + 1 - 4$$

$$= x^2 - 2x - 3 \quad \checkmark$$

(4)

DP vorm  $\checkmark$   
 subst (0; -3)  $\checkmark$   
 a  $\checkmark$

vgl' deur  $\checkmark$   
 vermenigvuldiging

$$5.2 \quad x^2 - 2x - 3 = 0 \quad -$$

$$(x-3)(x+1) = 0 \quad \checkmark$$

$$x = 3 \text{ of } -1 \quad \checkmark$$

$$AB = 4 \quad \checkmark$$

(4)

vgl = 0  $\checkmark$   
 factore  $\checkmark$   
 x-waardes  $\checkmark$

AB  $\checkmark$

$$5.3 \quad y \geq -4, y \in \mathbb{R} \quad \checkmark$$

(1)

$y \geq -4 \quad \checkmark$

$$5.4 \quad y = -d^x + q$$

$$(0; -3) \quad -3 = -d^0 + q \quad \checkmark$$

$$-2 = q \quad \checkmark$$

$$y = -d^x - 2$$

$$(1; -4) \quad -4 = -d^1 - 2 \quad \checkmark$$

$$d = -2 + 4 = 2 \quad \checkmark$$

$$y = -2^x - 2$$

(4)

subst (0; -3)  $\checkmark$   
 q  $\checkmark$

subst (1; -4)  
 d  $\checkmark$

$$-2x^2 + 2x - 3$$

5.5

$$y = (-x)^2 - 2(-x) - 3$$

$$= x^2 + 2x - 3$$

✓

$x \rightarrow -x$  ✓

✓ (2)

vgl ✓

5.6

$$y = (x+3)^2 - 2(x+3) - 3$$

$$= x^2 + 6x + 9 - 2x - 6 - 3$$

$$= x^2 + 4x$$

✓ (1)

vgl.

5.7

$$p(x) = -(-2^x - 2) - 2$$

$$= +2^x + 2 - 2$$

$$= 2^x$$

✓

subst ✓

✓ (2)

vgl ✓

5.8

$$y = \log_2 x$$

✓ (2)

vgl ✓

5.9

$$\left( \begin{array}{c} -4 \\ 1 \end{array} \right)$$

(2)

$x^y$   $y^x$



$$6.11 \quad x-2 = -x+2 \quad \checkmark$$

$$2x = 6$$

$$x = 3 \quad \checkmark$$

$$y = -3+2 = -1 \quad \checkmark$$

$$(3; -1)$$

(3)

gelykstel  $\checkmark$

$x \checkmark$

$y \checkmark$

$$6.12 \quad y = \frac{a}{x-3} - 1$$

$$p = -3 \quad q = 1$$

(2)

$p \checkmark$

$q \checkmark$

$$6.13 \quad y = \frac{a}{x-3} - 1$$

$$(2; -5) \quad -5 = \frac{a}{2-3} - 1 \quad \checkmark$$

$$-5 = \frac{a}{-1} - 1$$

$$-4 = -a$$

$$a = 4$$

(2)

$a$ -waarde

6.14

$$6.2.1 \quad y = 4x - 6$$

$$x = 4y - 6 \quad \checkmark$$

$$4y = x + 6$$

$$y = \frac{1}{4}x + \frac{3}{2} \quad \checkmark$$

(2)

$$x \leftrightarrow y \quad \checkmark$$

$$y = \checkmark$$

$$6.2.2 \quad m(x) = \frac{4}{x} - 6 \quad \checkmark$$

vgl  $\checkmark$

hiperbool.  $\checkmark$

(2)

naam  $\checkmark$

$$6.3 \quad \frac{m-1 + m+6}{2} = 3 \quad \checkmark$$

sum van wortels = 3  $\checkmark$

$$\frac{2m+5}{2} = 3$$

$$2m = 1$$

$$m = \frac{1}{2} \quad \checkmark$$

(2)

m-waarde  $\checkmark$

[13]

$$7.11 \quad f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h} \quad \checkmark$$

formule  $\checkmark$

$$= \lim_{h \rightarrow 0} \frac{2(x+h)^2 - 1 - (2x^2 - 1)}{h} \quad \checkmark$$

subst.  $x+h$   $\checkmark$

$$= \lim_{h \rightarrow 0} \frac{2x^2 + 4xh + 2h^2 - 1 - 2x^2 + 1}{h} \quad \checkmark$$

vereenvoudigen  $\checkmark$

$$= \lim_{h \rightarrow 0} \frac{h(4x + 2h)}{h} \quad \text{hakties!!!} \quad \checkmark$$

faktoriseren

$$= 4x \quad \checkmark (5)$$

antw.  $\checkmark$   
[deels antw 0.]  
(-1 N)

$$7.12 \quad f'(-4) = 4(-4) = -16 \quad \checkmark$$

(1)

-16  $\checkmark$

$$7.11 \quad f'(x) = 12x^2 - 4x \quad \checkmark$$

(2)

$12x^2 \checkmark - 4x \checkmark$

$$7.2.11 \quad f(x) = 4\sqrt{x^{-6}} + \frac{2}{\sqrt{x}}$$

$$= 4x^{-3} + \frac{2}{\sqrt{x}}$$

$4x^{-3} \checkmark$

$$f'(x) = -12x^{-4} \quad \checkmark (\checkmark)$$

(3)

$-12x^{-4} \checkmark$

geen waarde  $\checkmark$

$$7.2.12 \quad \sum_{n=1}^3 -2x^{n-1}$$

$$-2x^0 - 2x^1 - 2x^2 \quad \checkmark$$

$$f'(x) = -2 - 4x$$

(3)

$\Sigma \checkmark$

$-2 \checkmark - 4x \checkmark$

$$4t^2 - 2tr + r - 1 = 0$$

7.22

$$\therefore -2tr + r = 1 - 4t^2$$

$$r(1-2t) = 1 - 4t^2$$

Isolier r ✓  
Faktorisiere ✓

24

$$r = \frac{(1+2t)(1-2t)}{(1-2t)}$$

$$= 1+2t$$

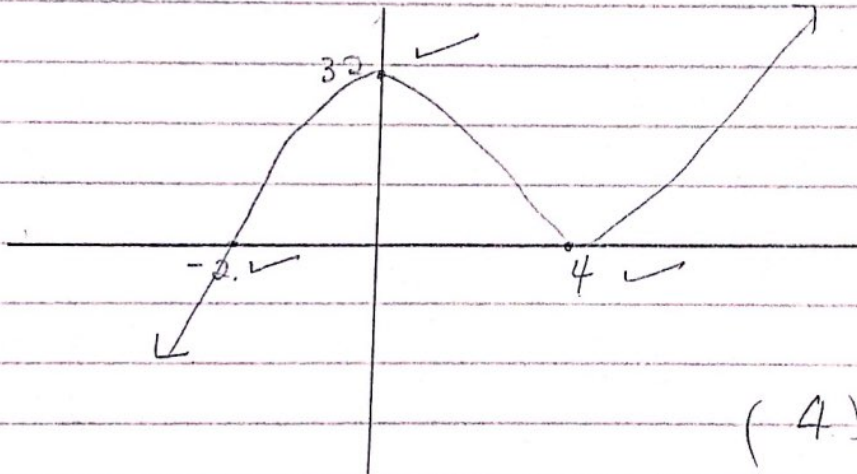
$$\frac{dr}{dt} = 2$$

(4)

r ✓  
 $\frac{dr}{dt}$  ✓

[18]

8.1



X-Achsenritze ✓  
Y-Achsenritze ✓  
1 DP ✓  
2de DP ✓

(4)

8.2.1  $m = 2$  ✓

(1)

m ✓

8.2.2  $\alpha = 1$  of  $3$  ✓

(2)

$\alpha = 1$   $3$  ✓

8.2.3  $f'(x) = 3ax^2 + 2bx + c$  ✓

$$f''(x) = 6ax + 2b = 0$$
 ✓

$$6ax = -2b$$

$$\therefore x = \frac{-2b}{6a} = \frac{-b}{3a}$$
 ✓

(3)

$f'(x)$  ✓  
 $f''(x) = 0$  ✓  
 $x$  ✓

8.2.4  $1 < x < 3$

✓ ✓

(2)

1, 3 ✓

notatie ✓

[12]

9.11

$$1000 = x^2 h$$

$$h = \frac{1000}{x^2} \quad \checkmark$$

B.O

$$B.O = 4x^2 + 4x \quad \checkmark$$

$$\begin{aligned} \text{OPP} &= 4x^2 + 4x \left( \frac{1000}{x^2} \right) \quad \checkmark \\ &= 4x^2 + \frac{4000}{x} \end{aligned} \quad (3)$$

h ✓

formula ✓

subst ✓

9.2

$$\text{Min opp } F'(x) = 0 \quad \checkmark$$

$$f(x) = 4x^2 + \frac{4000}{x}$$

$$= 4x^2 + 4000x^{-1}$$

$$F'(x) = 8x - 4000x^{-2} \quad \checkmark$$

$$8x - \frac{4000}{x^2} = 0$$

$$8x^3 = 4000$$

$$x^3 = 500 \quad \checkmark$$

$$x = 7.94 \text{ cm} \quad \checkmark$$

$$F'(x) = 0 \quad \checkmark$$

$$F'(x) \quad \checkmark$$

$$x^3 = 500 \quad \checkmark$$

$$x = 7.94 \quad \checkmark$$

(4)

[7]

$$10.1 \quad P(V \cap G) = \frac{147}{540} = 0,27$$

(2)

147 ✓  
540 ✓

$$P(A \cap B) = P(A) \times P(B)$$

10.2 Onafhankelijk als  $P(V \cap G) = P(V) \times P(G)$

✓ Formule.

$$P(V \cap G) = 0,27$$

$$P(V) \times P(G)$$

$$= \frac{240}{540} \times \frac{330}{540} = 0,27$$

Gelijktel ✓

LK ✓

$$\therefore P(V \cap G) = P(V) \times P(G)$$

∴ keerder correct ✓

(4)

RK ✓

goed getrokken ✓

$$\text{of } P(M \cap G) = \frac{183}{540} = 0,34$$

$$P(M) \times P(G)$$

$$= \frac{300}{540} \times \frac{330}{540} = 0,34$$

∴ keerder correct

$$10.21. \quad \frac{8!}{2!3!} = 3360$$

(3)

$\frac{8!}{2!3!} = 3360$

$$10.22. \quad \frac{8!}{2!2!} = 10.080$$

(2)

$\frac{8!}{2!2!} = 10080$

$$2.3 \quad P = \frac{4!3!2!}{7!} = \frac{288}{5040} = \frac{2}{35}$$

(4)

$\frac{4!3!2!}{7!} = \frac{2}{35}$

[15]

$\frac{2}{35}$