1.1.1. $x(2x+6) = 0$

$x = 0$ or -3 ✓ ✓ **2**

2. $4x^2 = 9 - 3x$

$4x^2 + 3x - 9 = 0$ ✓

$x = \dfrac{-(3) \pm \sqrt{(3)^2 - 4(4)(-9)}}{2(4)}$ ✓

$= \dfrac{-3 \pm \sqrt{153}}{8}$

$= 1,17$ or $-1,92$ ✓ ✓ **4**

3. $x(x-4) + 2(4-x) > 0$

$x(x-4) - 2(x-4) > 0$ ✓

$(x-4)(x-2) > 0$ ✓

CV: $(x-4)(x-2) = 0$

$x = 4$ or 2

$\dfrac{(x-4)(x-2)}{x}$ (+) $\overset{0}{\underset{2}{\mid}}$ $-$ $\overset{0}{\underset{4}{\mid}}$ (+)

A

✓✓ $x < 2$ or $4 < x$ **4**

4. $f(x) = \dfrac{\sqrt{x+14}}{x+2}$

(a) $x + 14 \geqslant 0$

$x \geqslant -14$

UD $x + 2 = 0$

$x = -2$

$\therefore$ $x \geqslant -14$; $x \neq -2$ ✓ ✓ **2**

1.1.4 (b) $f(x) = 1$

$\dfrac{\sqrt{x+14}}{x+2} = 1$

LCD $= (x+2)$ ($\therefore x \neq -2$)

x thru

$\sqrt{x+14} = x + 2$ ✓

$(\sqrt{x+14})^2 = (x+2)^2$

$x + 14 = x^2 + 4x + 4$ ✓

$0 = x^2 + 3x - 10$

$0 = (x-2)(x+5)$ ✓

$\therefore x = 2$ or $-\cancel{5}$

✓ ans + selection   reject **4**

1.2. $x - 3y = 1$

$x = 3y + 1$ ✓

$x^2 - 2xy + 9y^2 = 17$ ✓

$(3y+1)^2 - 2(3y+1)y + 9y^2 = 17$ ✓

$9y^2 + 6y + 1 - 6y^2 - 2y + 9y^2 = 17$

$12y^2 + 4y - 16 = 0$

$\div 4:$ $3y^2 + y - 4 = 0$ ✓

$(y-1)(3y+4) = 0$ ✓

$\therefore$ $y = 1$ or $-4/3$ ✓

$x = 3(1) + 1$ or $3(-\tfrac{4}{3}) + 1$

$= 4$ ✓ $= -3$ **6**

1.3.

$$1 + \frac{1}{x} = \frac{x+1}{x}$$

$$\frac{1}{1 + \frac{1}{x}} = \frac{1}{\frac{x+1}{x}} \checkmark$$

$$= 1 \times \frac{x}{x+1}$$

$$= \frac{x}{x+1} \checkmark$$

$$1 + \frac{1}{1 + \frac{1}{x}} = 1 + \frac{x}{x+1}$$

$$= \frac{x+1 + x}{x+1}$$

$$= \frac{2x+1}{x+1} \checkmark$$

$$\therefore \quad 1 + \frac{10}{1 + \frac{1}{1 + \frac{1}{x}}}$$

$$= 1 + \frac{10}{\frac{2x+1}{x+1}}$$

$$= 1 + 10 \times \frac{x+1}{2x+1}$$

$$= 1 + \frac{10(x+1)}{2x+1}$$

$$\therefore \quad 1 + \frac{10x+10}{2x+1} = 7$$

$$\frac{10x+10}{2x+1} = 6 \checkmark$$

$$10x+10 = 6(2x+1)$$

$$10x+10 = 12x+6$$

$$4 = 2x$$

$$2 = x \checkmark$$

5

2.1.

$$\text{Num} = 125^x \cdot \sqrt{5^{4x-2}}$$

$$= (5^3)^x \cdot 5^{\frac{4x-2}{2}}$$

$$= 5^{3x} \cdot 5^{2x-1} \checkmark$$

$$= 5^{5x-1}$$

$$\text{Den} = \sqrt[3]{5^{12x+6}} \cdot 5^x$$

$$= 5^{\frac{12x+6}{3}} \cdot 5^x$$

$$= 5^{4x+2} \cdot 5^x$$

$$= 5^{5x+2}$$

$$\therefore \quad \frac{5^{5x-1}}{5^{5x+2}}$$

$$= \frac{5^{5x} \cdot 5^{-1}}{5^{5x} \cdot 5^2}$$

$$= 5^{-1-2}$$

$$= 5^{-3} \checkmark$$

$$= \frac{1}{125} \checkmark \qquad \frac{1}{5^3}$$

4

2.2.1.

$$6x^{\frac{3}{2}} = 48$$

$$x^{3/2} = 8 \checkmark$$

$$(x^{3/2})^{2/3} = (8)^{2/3} \checkmark$$

$$x = 4 \checkmark$$

3

2.

$$x^{\frac{1}{2}} - 3x^{\frac{1}{4}} + 2 = 0$$

$$k = x^{\frac{1}{4}} \qquad (k)^2 = \left(x^{\frac{1}{4}}\right)^2 \checkmark$$

$$k^2 = x^{\frac{1}{2}}$$

$$k^2 - 3k + 2 = 0$$

$$(k-2)(k-1) = 0 \checkmark$$

$$\therefore k = 2 \text{ or } 1$$

$$x^{\frac{1}{4}} = 2 \quad \text{or} \quad x^{\frac{1}{4}} = 1$$
$$\left(x^{\frac{1}{4}}\right)^4 = (2)^4 \qquad \left(x^{\frac{1}{4}}\right)^4 = (1)^4$$
$$x = 16 \qquad\qquad x = 1 \qquad\qquad 4$$

2.3
$$16^x = (2^4)^x = 2^{4x}$$
$$4^x = (2^2)^x = 2^{2x}$$
$$k = 2^x$$
$$16^x - 100 = l\,(4^x + 10)$$
$$k^4 - 100 = l\,(k^2 + 10)$$
$$l = \frac{(k^2 - 10)(k^2 + 10)}{k^2 + 10}$$
$$= k^2 - 10$$
$$= 2^{2x} - 10$$

$$(\text{accept} \quad 4^x - 10) \qquad 4$$

24
$$x \ ; \ x+1$$

$$(x+1)^2 - (x)^2 = 45$$
$$x^2 + 2x + 1 - x^2 = 45$$
$$2x = 44$$
$$x = 22$$

$$(22 + 23)^2$$
$$= 2025 \qquad\qquad 4$$

3.1.
$$5,5 \ ; \ 5,0 \ ; \ 4,5 \ ; \ \dots$$
$$-0,5 \quad -0,5$$

3.1.1. $\quad 4,0 \ ; \ 3,5 \qquad\qquad 2$

2.
$$T_n = a + (n-1)d$$
$$= 5,5 + (n-1)(-0,5)$$
$$= 5,5 - 0,5n + 0,5$$
$$= -0,5n + 6 \qquad\qquad 2$$

3.
$$T_n < -113,5$$
$$-0,5n + 6 < -113,5$$
$$-0,5n < -119,5$$
$$n > 239$$

$$\therefore \quad T_{240} \qquad\qquad 2$$

3.2 $\quad d = 5 \qquad T_{38} = 192$
$$a + 37d = 192$$
$$a + 37(5) = 192$$
$$a = 7 \qquad\qquad 3$$

4. $T_n = n^2 - 12n + k$

4.1.1. $T_{62} = 3132$

$(62)^2 - 12(62) + k = 3132$

$k = 32$ ✓   **2**

2. $T_n = n^2 - 12n + 32$

$T_1 = (1)^2 - 12(1) + 32$

$= 21$

Similarly:

$21 ; 12 ; 5 ; 0 ; \ldots$ ✓

$\underbrace{-9}_{} \underbrace{-7}_{} \underbrace{-5}_{}$

$\underbrace{}_{2} \underbrace{}_{2}$

$\therefore -9 ; -7 ; -5$ ✓   **2**

3. $T_n = n^2 - 12n + 32$

$n = \dfrac{-(-12)}{2(1)}$ ✓

$= 6$ ✓   **2**

4. T_{n-1}

$= (n-1)^2 - 12(n-1) + 32$

✓ $= n^2 - 2n + 1 - 12n + 12 + 32$

✓ $= n^2 - 14n + 45$ **2**

4.1.5. $T_n - T_{n-1} = 149$ ✓

$n^2 - 12n + 32 - (n^2 - 14n + 45) = 149$

$n^2 - 12n + 32 - n^2 + 14n - 45 = 149$

$2n = 162$

$n = 81$ ✓

$\therefore T_{80}$ and T_{81} ✓   **3**

(OR)

1st diff:

$T_n' = -9 + (n-1)(2)$

$= -9 + 2n - 2$

$= 2n - 11$ ✓

$T_n' = 149$ ✓

$2n - 11 = 149$

$2n = 160$

$n = 80$

$\therefore T_{80}$ and T_{81} ✓

4.2. $T_1 ; T_2 ; T_3 ; T_4$

$\quad x \quad\quad 4 \quad\quad 3x \quad\quad 18$

$\underbrace{}_{4-x} \underbrace{}_{3x-4} \underbrace{}_{18-3x}$

$3x - 4 - (4-x) = 18 - 3x - (3x-4)$

$3x - 4 - 4 + x = 18 - 3x - 3x + 4$

$4x - 8 = -6x + 22$ ✓

$\therefore 10x = 30$

$x = 3$ ✓

$\therefore T_3 = 9$ ✓ $3x$ **3**

5. $f: y = \dfrac{a}{x+p} + q$

$g: y = \dfrac{1}{3}x + c$

5.1 $va: \quad x + p = 0 \qquad x = 3$

$\qquad\qquad x = -p$

$\qquad\qquad -p = 3$

$\qquad\qquad \therefore p = -3 \checkmark$

| 1
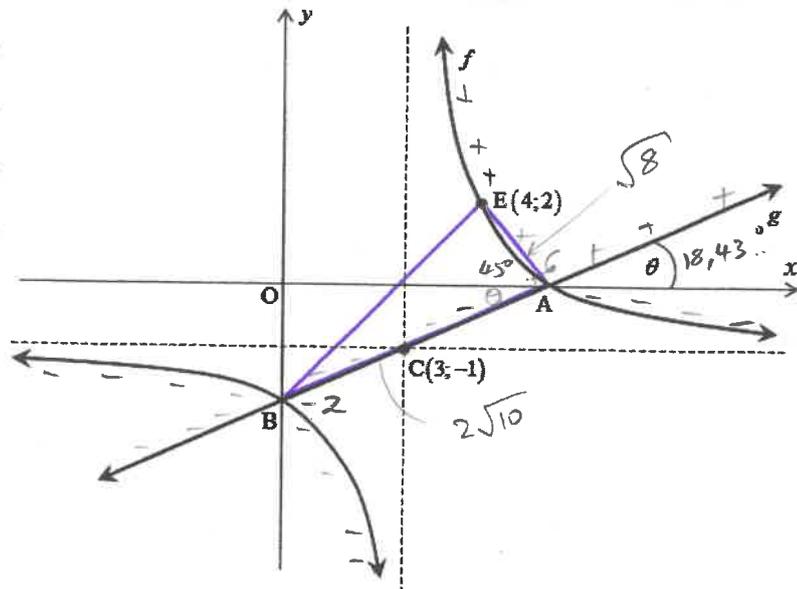
$x = 6$

$\qquad \therefore A(6; 0) \checkmark$

$yint: \quad y = \dfrac{3}{0-3} - 1$

$\qquad\qquad\quad = -2$

$\qquad \therefore B(0; -2) \checkmark$ | 3

5.2 $ha: \quad y = q \qquad y = -1$

$\qquad\qquad \therefore q = -1$

$\qquad \therefore y = \dfrac{a}{x-3} - 1 \checkmark$

$\quad Sub \quad E(4; 2)$

$\qquad 2 = \dfrac{a}{4-3} - 1 \checkmark$

$\qquad 3 = a$

$\qquad \therefore f: y = \dfrac{3}{x-3} - 1$ | 3

5.4 $h(x) = f(-(x-4))$

$\qquad\qquad = f(-x+4)$

$\checkmark = \dfrac{3}{-x+4-3} - 1$

$\qquad = \dfrac{3}{-x+1} - 1$

$\qquad = \dfrac{3}{-(x-1)} - 1$

$\checkmark = \dfrac{-3}{x-1} - 1$

$va: \quad x - 1 = 0 \quad \therefore x = 1$

5.3 A

$xint \qquad 0 = \dfrac{3}{x-3} - 1 \checkmark$

$\qquad\qquad 1 = \dfrac{3}{x-3}$

$\qquad\qquad x - 3 = 3$

$D_h: \quad x \in \mathbb{R}; \ x \neq 1 \checkmark$ | 3

page 5

5.5.	$y_f \times y_g \quad —$			
	$\therefore x \in (3;6)$ or $(6; \infty)$	2		
5.6.	$\tan\theta = \frac{1}{3}$			
	$\text{ref}^\wedge = 18,43\ldots$			
	tan + in			
	I: $\theta = 18,43\ldots^\circ$			
	$\therefore O\hat{A}B = 18,43\ldots^\circ$ vert opp $^\wedge$'s =			
	$M_{AE} = \frac{2-0}{4-6}$ $A(6;0)$ $E(4;2)$			
	$\quad = -1$			
	$\tan E\hat{A}x = -1$			
	$\text{ref}^\wedge = 45^\circ$			
	tan $-$ in			
	II: $E\hat{A}x = 135^\circ$			
	$\therefore O\hat{A}E = 45^\circ$ $^\wedge$'s on str line			
	$\quad\quad\quad = 180^\circ$			
	$\therefore B\hat{A}E = 18,43\ldots^\circ + 45^\circ$			
	$\quad\quad = 63,43\ldots^\circ$			
	$AE = \sqrt{(2-0)^2 + (6-4)^2}$			
	$\quad = \sqrt{8} \quad\quad 2\sqrt{2}$			
	$\therefore$ area $\triangle ABE$			
	$= \frac{1}{2}(2\sqrt{10})(\sqrt{8}) \sin 63,43\ldots^\circ$			
	$= 8$ units^2	5		

6
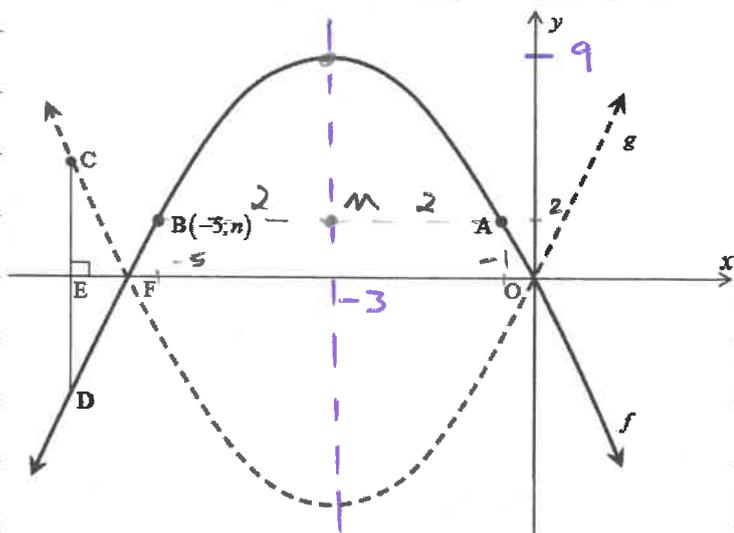
$f: \quad y = -x^2 - 6x$

$g: \quad y = ax^2 + bx$

6.1.
$$y = -x^2 - 6x \qquad f$$
$$= -[x^2 + 6x + (+3)^2 - (+3)^2]$$
$$= -[(x+3)^2 - 9]$$
$$= -(x+3)^2 + 9 \quad \checkmark \qquad 3$$

$$0 = 2x^2 + 12x - 14$$
$$\text{÷2:} \quad 0 = x^2 + 6x - 7 \quad \checkmark$$
$$= (x-1)(x+7)$$
$$\therefore x = \cancel{1} \text{ or } -7 \quad \checkmark$$
$$ \text{reject}$$

$$\therefore \quad OE = 7 \quad \text{units}$$
$$\checkmark \qquad 5$$

6.2.
$$AOS_f: \qquad x = -3 \quad \checkmark$$
$$BM = 2 \quad \therefore \ MA = 2$$
$$\therefore \ x_A = -3 + 2 = -1 \quad \checkmark$$
$$y_A = -(-1)^2 - 6(-1)$$
$$= 5 \qquad \checkmark$$
$$\therefore \ A(-1; 5) \qquad 3$$

6.3.
$$g: \qquad -y = -x^2 - 6x$$
$$y_c = x^2 + 6x \quad \checkmark$$

$$CD = y_c - y_D$$
$$14 = x^2 + 6x - (-x^2 - 6x)$$
$$14 = x^2 + 6x + x^2 + 6x$$

6.4. 1. $f(x) = -x^2 - 6x + k$ $\mathbb{R}'$ roots

$\updownarrow$
y int

y int < -9

$\quad k < -9$

✓ ✓

(2)

2. $f(x+k)$ 2 $\mathbb{R}$ roots $\quad + \quad -$

$= -(x+k+3)^2 + 9$

$x_{tp}: \quad x + k + 3 = 0$

$\qquad \therefore x = -k - 3$
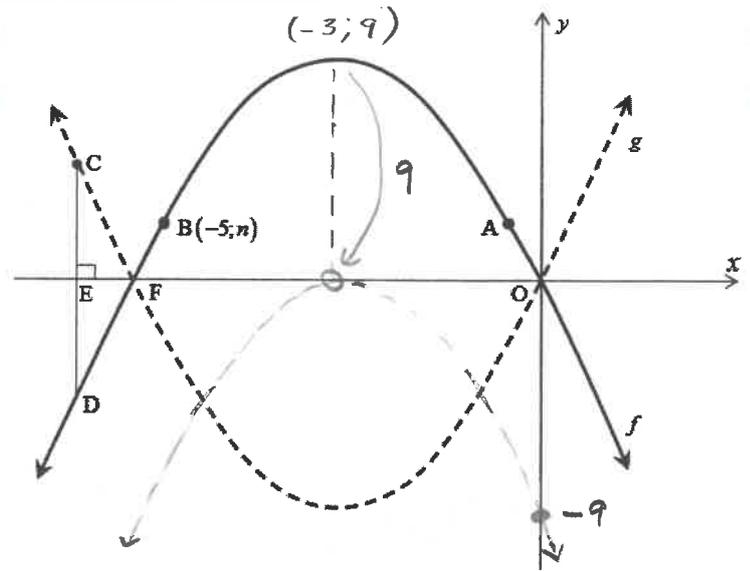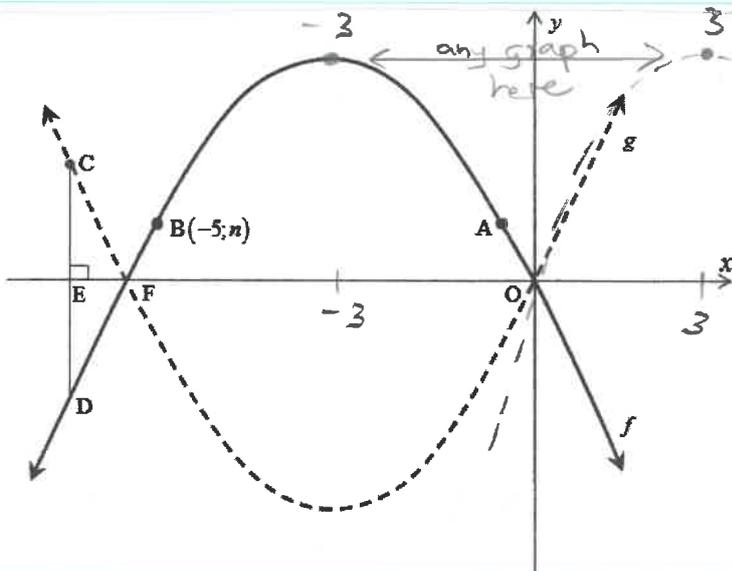
$-3 < x_{tp} < 3$

✓ $-3 < -k - 3 < 3$

$0 < -k < 6$

$0 > k > -6$

✓ ✓

(3)

7.1. $f: \quad y = \left(\frac{1}{3}\right)^{x+1} - 3$

1. ha: $\quad y = -3$ ✓   **1**

2. yint: $y = \left(\frac{1}{3}\right)^{0+1} - 3$

         $= -\frac{8}{3}$ ✓

   xint: $0 = $ ✓ $\left(\frac{1}{3}\right)^{x+1} - 3$

         $3 = \left(\frac{1}{3}\right)^{x+1}$

     $x+1 = \frac{\log 3}{\log \frac{1}{3}}$

       $x = -2$ ✓

Coords :

   $\left(0; -\frac{8}{3}\right) \quad (-2; 0)$ **3**

     -2.67

3.
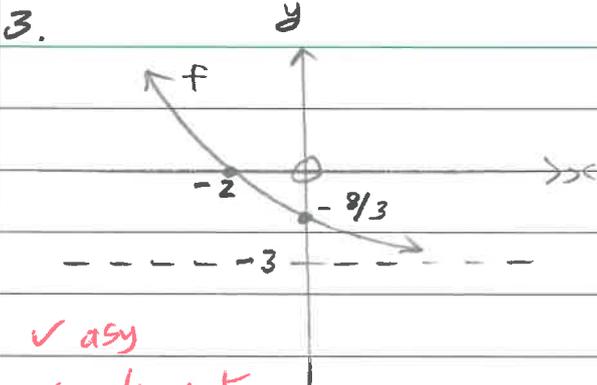
✓ asy
✓ x/y int
✓ shape   **3**

4. $y_f \geqslant 0$

   $\therefore x \in (-\infty; -2]$ **2**

        ✓✓

     (OR)

    $x \leq -2$

7.2. $h: \quad y = a \, k^x + r$

Rh $y \in (-2; \infty)$

   $\therefore \quad r = -2$ ✓   **1**

     $y = a \cdot k^x - 2$

  sub

   $(0; 0)$ $(2; 6)$

  $0 = a \cdot k^0 - 2$ $6 = a k^2 - 2$ ✓

  $0 = a - 2$ $8 = 2k^2$

  $2 = a$ ✓ $4 = k^2$

           $\pm\sqrt{4} = k$ rej-

            $2 = k$

$\therefore \quad y = 2 \cdot 2^x - 2$ ✓   **4**

8.1.

$$A = P(1-i)^n$$
$$= 250\,000\left(1 - \frac{13}{100}\right)^6$$
$$= R\,108\,406,55$$

3

8.2.

$$1 + i_{ea} = \left(1 + \frac{I_{nom}}{k}\right)^k$$
$$1 + \frac{7,5}{100} = \left(1 + \frac{I_{nom}}{400}\right)^4$$
$$\frac{43}{40} =$$
$$\sqrt[4]{\frac{43}{40}} = 1 + \frac{I_{nom}}{400}$$
$$7,30\,\% = I_{nom}$$
$$p\,a\ comp\ \tfrac{1}{4}\,ly$$

3

8.3.

$T_0 \quad T_1 \quad T_2 \quad T_3 \quad T_4 \quad T_5$

25000   10 000   5000   ?

4% pa monthly	7 % pa s-a

Snowball $A = P(1+i)^n$

• $T_0 - T_2$
$$A = 25000\left(1 + \frac{4}{1200}\right)^{2\times12}$$
$$= 27\,078,57\ldots$$

• $T_2 - T_4 \qquad + 10\,000$
$$A = 37078,57\ldots\left(1 + \frac{7}{200}\right)^{2\times2}$$
$$= 42\,548,51\ldots$$

• $T_4 - T_5 \qquad - 5000$
$$A = 37548,51\ldots\left(1 + \frac{7}{200}\right)^{1\times2}$$
$$= R\,40\,222,91$$

$+\,10\,000 - 5000$

5

Parallel

• 25000
$$A = 25000\left(1 + \frac{4}{1200}\right)^{2\times12}\left(1 + \frac{7}{200}\right)^{3\times2}$$
$$= 33\,286,48\ldots \to A$$

• 10 000
$$A = 10000\left(1 + \frac{7}{200}\right)^{3\times2}$$
$$= 12\,292,55\ldots \to B$$

• 5000
$$A = 5000\left(1 + \frac{7}{200}\right)^{1\times2}$$
$$= 5\,356,12\ldots \to C$$

$$\therefore A + B - C$$
$$= R\,40\,222,91$$

(5)

8.4.

$T_0 \quad T_1 \quad T_2 \quad T_3 \quad T_4$

$x \qquad 8000 \qquad X_1$

$12\,\%\ pa$

$T_0 \quad T_1 \quad T_2 \quad T_3$

$x \qquad 8000 \qquad X_2$

$12\,\%\ pa \quad s-a$

But,

$$X_1 = X_2$$

PTO

Snowball

$$\left[x\left(1+\frac{12}{100}\right)^2-5000\right]\left(1+\frac{12}{100}\right)^2 = \left[x\left(1+\frac{12}{200}\right)^2-3000\right]\left(1+\frac{12}{200}\right)^4$$

$$x\left(1+\frac{12}{100}\right)^4 - 5000\left(1+\frac{12}{100}\right)^2 = x\left(1+\frac{12}{200}\right)^6 - 3000\left(1+\frac{12}{100}\right)^4$$

$$x\left[\left(1+\frac{12}{100}\right)^4-\left(1+\frac{12}{200}\right)^6\right] = 5000\left(1+\frac{12}{100}\right)^2-3000\left(1+\frac{12}{200}\right)^4$$

$$x \cdot 0,15\ldots = 2484,56\ldots$$

$$\underline{x \quad = R\ 16\ 029,45} \qquad \text{(6)}$$

Parallel

$$x\left(1+\frac{12}{100}\right)^4-3000\left(1+\frac{12}{100}\right)^2 = x\left(1+\frac{12}{200}\right)^6 - 3000\left(1+\frac{12}{200}\right)^4$$

$$x\left[\left(1+\frac{12}{100}\right)^4-\left(1+\frac{12}{200}\right)^6\right] = 5000\left(1+\frac{12}{100}\right)^2-3000\left(1+\frac{12}{200}\right)^4$$

$$x \cdot 0,15\ldots = 2484,56\ldots$$

$$\underline{x \quad = R\ 16\ 029,45} \qquad \text{(6)}$$

9.1.1. $P(A) = 0,3$ $P(B) = 0,6$

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

$= 0,3 \times 0,6$

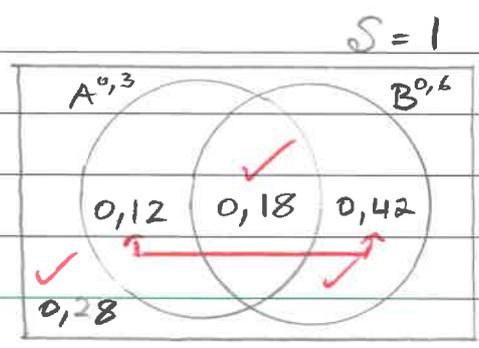$= 0,18$ ✓

$\neq 0$

∴ A and B are NOT mutually ✓ exclusive. **2**

2. $P(A \cup B)$

$= P(A) + P(B) - P(A \cap B)$

$= 0,3 + 0,6 - 0,18$

$= 0,72$

$S = 1$

A⁰,³ ... B⁰,⁶

0,12   0,18 ✓   0,42

✓

0,28

$1 - 0,72 = 0,28$ **3**

3. $P(A' \cap B')$

⟨0,42⟩ ⟨**0,28**⟩ ⟨0,12⟩ ⟨0,28⟩

∴ $0,28$ ✓✓   **2**

9.2.1. $P(M) = \dfrac{42}{106}$

$= \dfrac{21}{53}$ ✓   0,40   **1**

2. E = enjoy jogging on sand

$P(F) = \dfrac{64}{106} = \dfrac{32}{53}$

$P(E) = \dfrac{56}{106} = \dfrac{28}{53}$

$P(M \cap E)$ $P(M) \times P(E)$

$= \dfrac{26}{106}$ $= \dfrac{21}{53} \times \dfrac{28}{53}$ ✓

$= \dfrac{13}{53}$ ✓ $= \dfrac{588}{2809}$ 0,209

$P(M \cap E) \neq P(M) \times P(E)$

∴ Being male and Enjoy jogging on sand are NOT independent ✓

∴ NO   **4**

⟨OR⟩

$P(F \cap E)$ $P(F) \times P(E)$

$= \dfrac{30}{106}$ $= \dfrac{32}{53} \times \dfrac{28}{53}$ ✓

$= \dfrac{15}{53}$ ✓ $= \dfrac{896}{2809}$ ✓

$P(F \cap E) \neq P(F) \times P(E)$

9.3. 1. S = sunny   U = use

Tree diagram:
- S (0,7)
  - U (x): SU
  - U' (1-x): SU' ✓
- S' (0,3)
  - U (0,2x): S'U ✓
  - U' (1-0,2x): S'U' ✓
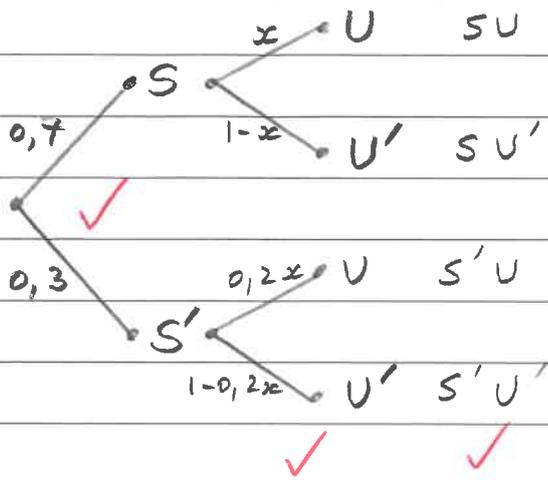
3

2. P(U)
   = P(SU) + P(S'U)
   = 0,7x + 0,3·0,2x
   = 0,7x + 0,06x
   = 0,76x ✓

   ∴ 0,76x = 0,62 ✓
   ∴   x = $\frac{31}{38}$

   ————————————➤ ✓   3

            0,82

**NATIONAL
SENIOR CERTIFICATE/
NASIONALE SENIOR
SERTIFIKAAT**

GRADE/GRAAD 11

NOVEMBER 2025

**MATHEMATICS P1/WISKUNDE V1
MARKING GUIDELINE/NASIENRIGLYN**

MARKS/PUNTE: 150

This marking guideline consists of 21 pages.
Hierdie nasienriglyn bestaan uit 21 bladsye.

NOTE/LET WEL:

- If a candidate answers a question TWICE, mark the FIRST attempt ONLY.
  Indien 'n kandidaat 'n vraag TWEE keer beantwoord, merk SLEGS die EERSTE poging.
- Consistent accuracy applies in ALL aspects of the marking guideline.
  Volgehoue akkuraatheid geld deurgaans in ALLE aspekte van die nasienriglyn.
- If a candidate crossed out an attempt of a question and did not redo the question, mark the crossed-out attempt.
  Indien 'n kandidaat 'n poging vir 'n vraag deurgetrek het en nie die vraag weer beantwoord het nie, merk die poging wat deurgetrek is.
- The mark for substitution is awarded for substitution into the correct formula.
  Die punt vir substitusie word toegeken vir substitusie in die korrekte formule.

QUESTION/VRAAG 1

1.1.1	$x(2x+6)=0$ $x=0$ or/of $2x+6=0$ $x=0$ or/of $x=-3$	✓ $x=0$ ✓ $x=-3$ (2)
1.1.2	$4x^2+3x-9=0$ $x = \dfrac{-b\pm\sqrt{b^2-4ac}}{2a}$ $x = \dfrac{-3\pm\sqrt{(3)^2-4(4)(-9)}}{2(4)}$ $x = \dfrac{-3\pm\sqrt{153}}{8}$ $\therefore x=1{,}17$ or/of $x=-1{,}92$ Penalise 1 mark for incorrect rounding off./ *Penaliseer 1 punt vir verkeerde afronding.*	✓ standard form / *standaardvorm* ✓ substitution / *vervanging* ✓ $x=1{,}17$ or/of ✓ $x=-1{,}92$ (4)

1.1.3

$x(x-4)+2(4-x)>0$

$x(x-4)-2(x-4)>0$ ✓ $-2(x-4)$

$(x-4)(x-2)>0$

critical values / kritieke waardes ✓ critical values / kritieke waardes

$x=4$ or / of $x=2$

$x<2$ or / of $x>4$　　✓✓ $x<2$ or / of $x>4$ (accuracy / akkuraatheid)

(4)

1.1.4

(a)

$x+14\geq 0$; $x\neq -2$ ✓ $x\geq -14$

$x\geq -14$ ✓ $x\neq -2$

(2)

(b)

$\dfrac{\sqrt{x+14}}{x+2}=1$ ✓ isolating surd / isoleer wortelvorm

$\sqrt{x+14}=x+2$ ✓ square both sides / kwadreer beide kante

$x+14=x^2+4x+4$

$x^2+3x-10=0$ ✓ factors / faktore

$(x+5)(x-2)=0$

$x\neq -5$ or / of $x=2$ ✓ answer with choice / antwoord met keuse (−5 excluded / uitgesluit)

(4)

1.2

$x-3y=1$ ....(1)

$x^2-2xy+9y^2=17$............(2)

From / Vanaf (1): $x=3y+1$ ....(3) ✓ $x=3y+1$

(3) into/in (2):

$(3y+1)^2-2y(3y+1)+9y^2=17$ ✓ substitution / vervanging

$9y^2+6y+1-6y^2-2y+9y^2-17=0$

$12y^2+4y-16=0$ ✓ standard form / standaardvorm

$3y^2+y-4=0$ ✓ factors / faktore

$(y-1)(3y+4)=0$

$y=1$ or/of $y=-\dfrac{4}{3}$ ✓ y values / y-waardes

$x=4$ or/of $x=-3$ ✓ x values / x-waardes

(6)

1.3

$1+\dfrac{10}{1+\dfrac{1}{1+\dfrac{1}{x}}}=7$

$1+\dfrac{10}{1+\dfrac{1}{\frac{x+1}{x}}}=7$ ✓ $\dfrac{1}{\frac{x+1}{x}}$

$1+\dfrac{10}{1+\dfrac{x}{x+1}}=7$ ✓ $\dfrac{x+1}{x}$

$1+\dfrac{10}{\frac{x+1+x}{x+1}}=7$

$1+\dfrac{10}{\frac{2x+1}{x+1}}=7$ ✓ $\dfrac{2x+1}{x+1}$

$1+\dfrac{10(x+1)}{2x+1}=7$

$\dfrac{2x+1+10x+10}{2x+1}=7$ ✓ $\dfrac{2x+1+10x+10}{2x+1}$

$\dfrac{12x+11}{2x+1}=7$

$12x+11=14x+7$

$2x=4$

$x=2$ ✓ answer / antwoord

(5)

QUESTION/VRAAG 2

2.1

$$\frac{125^x \sqrt{5^{4x-2}}}{\sqrt[3]{5^{12x+6}} \cdot 5^x}$$

$$= \frac{5^{3x} \cdot 5^{2x-1}}{5^{4x+2} \cdot 5^x}$$

$$= 5^{3x-x+2x-1-4x-2}$$

$$= 5^{-3}$$

$$= \frac{1}{125}$$

(4)

✓ $125^x \cdot (3)^{6x}$

✓ $\sqrt{5^{4x-2}} = 5^{2x-1}$ and/en

  $\sqrt[3]{5^{12x+6}} = 5^{4x+2}$

✓ $5^{3x-x+2x-1-4x-2}$

✓ answer / antwoord

2.2.1

$$6x^{\frac{3}{2}} = 48$$

$$x^{\frac{1}{2}} = 8$$

$$x = (2^3)^{\frac{2}{3}}$$

$$x = 2^2$$

$$x = 4$$

(3)

✓ dividing by 6 / deel deur 6

✓ raising by reciprocal / verhef tot omgekeerde/resiprook

✓ answer / antwoord

2.2.2

$$\left(\frac{1}{x^{\frac{1}{4}}}\right)^2 - 3x^{\frac{1}{4}} + 2 = 0$$

let/laat: $k = x^{\frac{1}{4}}$

$$k^2 - 3x + 2 = 0$$

$$(k-2)(k-1) = 0$$

$$k = 2 \text{ or/of } k = 1$$

$$x^{\frac{1}{4}} = 2 \text{ or/of } x^{\frac{1}{4}} = 1$$

$$x = 16 \text{ or/of } x = 1$$

OR/OF $\left(x^{\frac{1}{4}} - 2\right)\left(x^{\frac{1}{4}} - 1\right)$

(4)

✓ $\left(x^{\frac{1}{4}}\right)^2$

✓ factors / faktore

✓ $x^{\frac{1}{4}} = 2$ or/of $x^{\frac{1}{4}} = 1$

✓ answers / antwoord

2.3

$$A = L \times B$$

$$16^x - 100 = L \times (4^x + 10)$$

$$L = \frac{(4^x)^2 - 100}{4^x + 10}$$

$$L = \frac{(4^x - 10)(4^x + 10)}{4^x + 10}$$

$$L = 4^x - 10$$

$$\therefore \text{Length} = 4^x - 10$$

(4)

✓ substitution into area formula / vervanging in oppervlakte formule

✓ $16^x = (4^x)^2$

✓ factors of difference of 2 squares / faktore van verskil tussen 2 kwadrate

✓ answer / antwoord

2.4

Smaller integer / Kleiner heelgetal = x

next consecutive integer / opeenvolgende heelgetal = x+1

Difference / Verskil : $(x+1)^2 - x^2 = 45$

$$x^2 + 2x + 1 - x^2 = 45$$

$$2x = 44$$

$$x = 22$$

$$\therefore (22+23)^2 = 2025$$

(4)

[19]

✓ difference / verskil

✓ equating the difference to 45 / stel verskil gelyk aan 45

✓ $x = 22$

✓ $(\text{sum})^2 / (\text{som})^2 = 2025$

QUESTION/VRAAG 3

3.1.1	$d = -0,5$ $4 \quad ; \quad 3,5$	✓ 4 ✓ 3,5 (2)
3.1.2	$T_n = -0,5n + 6$	✓ $-0,5n$ ✓ $+6$ (2)
3.1.3	$-\dfrac{1}{2}n + 6 < -113,5$ $-0,5n < -119,5$ $n > 239$ $n = 240$	✓ $-\dfrac{1}{2}n + 6 < -113,5$ ✓ answer / antwoord (2)
3.2.1	$d = 5$ $T_n = 5n + c$ but / maar: $T_{38} = 192$ $192 = 5(38) + c$ $c = 2$ $T_1 = 5(1) + 2 = 7$ ∴ First term is 7 / Eerste term is 7	✓ $T_n = 5n + c$ ✓ substitution / vervanging ✓ answer / antwoord (3) **[9]**

QUESTION/VRAAG 4

4.1.1	$T_n = n^2 - 12n + k$ $3132 = (62)^2 - 12(62) + k$ $k = 32$	✓ substitution / vervanging ✓ answer / antwoord (2)
4.1.2	**Terms of the quadratic number pattern:** *Terme van die kwadratiese patroon:* $T_1 = (1)^2 - 12(1) + 32 = 21$ $T_2 = (2)^2 - 12(2) + 32 = 12$ $T_3 = (3)^2 - 12(3) + 32 = 5$ **Terms of the first difference:** *Terme van eerste verskille:* $-9 \quad ; \quad -7 \quad ; \quad -5$	✓ terms of quadratic number pattern / *terme van kwadratiese getalpatroon* ✓ answer / antwoord (2)
4.1.3	$T_n = n^2 - 12n + 32$ $n = \dfrac{-(-12)}{2(1)} = 6$	✓ method / metode ✓ answer / antwoord (2)
4.1.4	$T_{n-1} = (n-1)^2 - 12(n-1) + 32$ $= n^2 - 2n + 1 - 12n + 12 + 32$ $= n^2 - 14n + 45$	✓ simplification / vereenvoudiging ✓ answer / antwoord (2)

4.1.5	$T_n - T_{n-1} = 149$	✓ $T_n - T_{n-1} = 149$
	$n^2 - 12n + 32 - n^2 + 14n - 45 = 149$	
	$149 = 2n - 13$	✓ simplification / vereenvoudiging
	$n = 81$	
	consecutive terms are 80 and 81 / opeenvolgende terme is 80 en 81	✓ answer / antwoord
	OR / OF	**OR/OF**
	$T_n = 2n - 11$	✓ $T_n = 2n - 11$
	$149 = 2n - 11$	✓ equating T_n to 149
	$160 = 2n$	
	$n = 80$	
	consecutive terms are 80 and 81 / opeenvolgende terme is 80 en 81	✓ answer / antwoord (3)
4.2		

	x	4	$3x$	18	
		$4 - x$	$3x - 4$	$18 - 3x$	✓ 2nd diff i.t.o x / 2de versk. i.t.v x
		$4x - 8$		$-6x + 22$	

$4x - 8 = -6x + 22$ ✓ equating / gelykstelling

$10x = 30$

$x = 3$

$\therefore T_3 = 9$ ✓ answer / antwoord (3)

[14]

QUESTION/VRAAG 5

5.1	$p = -3$	✓ answer / antwoord (1)
5.2	$f(x) = \dfrac{a}{x-3} - 1$	✓ $f(x) = \dfrac{a}{x-3} - 1$
	Subst. / Vervang: $(4; 2)$	
	$2 = \dfrac{a}{4-3} - 1$	✓ substitution of $(4;2)$ / vervanging van $(4;2)$
	$a = 3$	
	$f(x) = \dfrac{3}{x-3} - 1$	✓ equation of f / vergelyking van f (3)
5.3	$g(x) = \dfrac{x}{3} + c$	
	$-1 = \dfrac{3}{3} + c$	
	$c = -2$	
	$\therefore B(0; -2)$	✓ coordinates of B / koördinate van B
	$0 = \dfrac{x}{3} - 2$	✓ $g(x) = 0$
	$2 = \dfrac{x}{3}$	
	$x = 6$	
	$\therefore A(6; 0)$	✓ coordinates of A / koördinate van A (3)
	OR/OF	**OR/OF**
	$f(0) = -2$	
	$B(0; -2)$	✓ coordinates of B / koördinate van B
	$0 = \dfrac{3}{x-3} - 1$	✓ $f(x) = 0$
	$1 = \dfrac{3}{x-3}$	
	$x - 3 = 3$	
	$x = 6$	
	$\therefore A(6; 0)$	✓ coordinates of A / koördinate van A (3)

5.4	$-(x-4)+3=0$ $-x+4-3=0$ $-x+1=0$ $x-1=0$ V.A: $x=1$ Domain / Gebied: $x\in\mathbf{R}; x\neq1$	✓ replacing x by $-(x-4)$ *vervang x met* $-(x-4)$ ✓ $x-1=0$ / $x=1$ ✓ answer / *antwoord*
	OR / OF	**OR/OF**
	$h(x) = \dfrac{3}{-(x-4)-3}-1$ $= \dfrac{3}{-x+4-3}-1$ $= \dfrac{3}{-(x-1)}-1$ $= \dfrac{-3}{x-1}-1$ Domain / Gebied: $x\in\mathbf{R}; x\neq1$	✓ replacing x by $-(x-4)$ *vervang x met* $-(x-4)$ ✓ denominator / *noemer*: $(x-1)$ ✓ answer / *antwoord*
		(3)
5.5	$x>3, x\neq6$ **OR / OF** $3<x<6$ or/*of* $x>6$	✓✓ answer / *antwoord*
		(2)

5.6.1
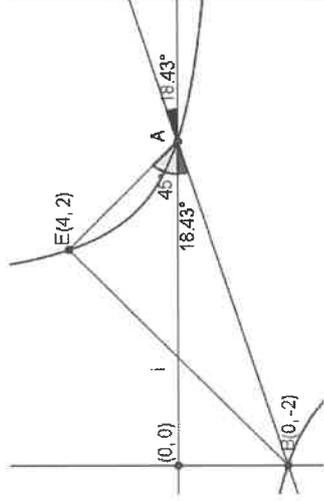
$m_{AB}=\dfrac{1}{3}$

$\therefore \theta=18,43°$

$\therefore B\hat{O}A=18,43°$ (Vert. opp $\angle$'s / *Regoorstaande* $\angle e$)

$m_{EA}=\dfrac{0-2}{6-4}=-1$

Ref.$\angle$ / *Verwys..*$\angle$: $E\hat{A}O=45°$

$\therefore E\hat{A}B=63,43°$

$EA=\sqrt{(4-6)^2+(2-0)^2}$
$=2\sqrt{2}$

Area of $\Delta ABE=\dfrac{1}{2}\times EA\times AB\times\sin E\hat{A}B$
$=\dfrac{1}{2}\times(2\sqrt{2})\times(2\sqrt{10})\sin63,43°$
$=8\,\text{units}^2$ / *eenhede*^{2}

✓ m_{AB} and/*en* m_{EA}

✓ Length of EA / *Lengte van* EA

✓ $18,43°$ and/*en* $45°$

✓ substitution in the area formula / *vervanging in die oppervlakte formule*

✓ answer / *antwoord*

(5)

[17]

QUESTION/VRAAG 6

6.1	$a = -1$	✓ value of a / waarde van a
	$x = \dfrac{6}{-2} = -3$	✓ $x = -3$ and / en $y = 9$
	$f(-3) = -(1)^2 - 6(-3) = 9$	✓ equation in T.P-form / Vergelyking in DP-vorm
	$f(x) = -(x+3)^2 + 9$	
	OR / OF	**OR/OF**
	$f(x) = -x^2 - 6x$	✓ common factor −1 / gemene faktor −1
	$\quad = -(x^2 + 6x)$	✓ completing the square $\pm (3)^2$ / voltooing van vierkant $\pm (3)^2$
	$\quad = -(x^2 + 6x + (3)^2 - (3)^2)$	✓ equation in T.P-form / vergelyking in DP-vorm
	$\quad = -((x+3)^2 - 9)$	
	$\quad = -(x+3)^2 + 9$	
	(3)	
6.2	$x_{TP} = -3$	✓ $x = -3$
	$\dfrac{x_B + x_A}{2} = x_{TP}$	
	$\dfrac{-5 + x_A}{2} = -3$	
	$-6 = -5 + x_A$	
	$x_A = -1$	✓ $x_A = -1$
	$f(-1) = -(-1)^2 - 6(-1) = 5$	✓ $f(-1)$
	$\therefore A(-1;5)$	
	(3)	

6.3	$g(x) = x^2 + 6x$	✓ $g(x)$
	$CD = g(x) - f(x)$	✓ $g(x) - f(x)$
	$14 = x^2 + 6x - (-x^2 - 6x)$	
	$14 = 2x^2 + 12x$	
	$2x^2 + 12x - 14 = 0$	✓ standard form / standaardvorm
	$x^2 + 6x - 7 = 0$	
	$(x+7)(x-1) = 0$	
	$x = -7$ or / of $x = 1$	✓ both x − values / beide x-waardes
	$\therefore x = -7$	
	$\therefore OE = 7$ units / eenhede	✓ answer / antwoord
	(5)	
6.4.1	$k < -9$	✓✓ answer / antwoord
	(2)	
6.4.2	$-x^2 - 6x = 0$	
	$x^2 + 6x = 0$	
	$x(x+6) = 0$	✓ x − values / x-waardes
	$x = 0$ or / of $x = -6$	
	$\therefore\ -6 < k < 0$	✓✓ answer / antwoord
	(3)	
	[16]	

QUESTION/VRAAG 7

7.1.1	$y = -3$	✓ answer / antwoord (1)
7.1.2	$\left(\dfrac{1}{3}\right)^{x+1} - 3 = 0$	✓ $f(x) = 0$
	$3 = \left(\dfrac{1}{3}\right)^{x+1}$	
	$\left(\dfrac{1}{3}\right)^{-1} = \left(\dfrac{1}{3}\right)^{x+1}$ OR / OF $3^1 = 3^{-x-1}$	
	$x+1 = -1$	
	$x = -2$	✓ $x = -2$
	$y = \left(\dfrac{1}{3}\right)^{0+1} - 3$	
	$= -\dfrac{8}{3} \approx -2{,}7$	✓ $y = -\dfrac{8}{3}$ (3)
7.1.3		✓ shape / vorm ✓ x and y intercepts / x- en y-afsnitte ✓ asymptote / asimptoot
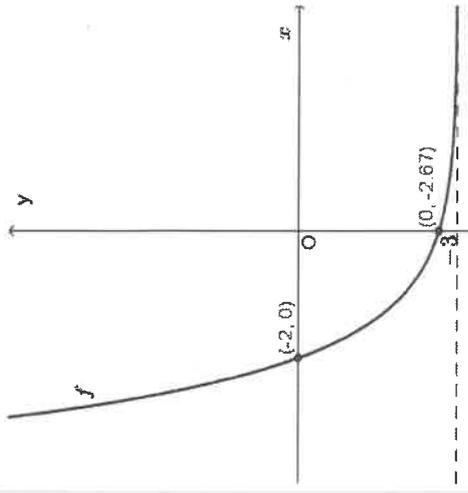
| 7.1.4	$x \leq -2$	✓✓ answer / antwoord (2)
7.2	$y = a.k^x + r$	
	$y = a.k^x - 2$	✓ $y = a.k^x - 2$
	Subst. / Vervang: $(0 \,; 0)$	
	$0 = a.k^0 - 2$	
	$2 = a$	✓ $a = 2$
	$6 = 2k^2 - 2$	✓ substitution of $(2\,;6)$ /
	$8 = 2k^2$	vervanging van $(2\,;6)$
	$4 = k^2$	
	$k = \pm 2$	
	$\therefore k = 2 \; ; k > 0$	
	$h(x) = 2.2^x - 2$	✓ equation h / vergelyking h (4)
		[13]

QUESTION/*VRAAG* 8

8.1
$$A = P(1-i)^n$$
$$= 250000(1-13\%)^6$$
$$= R108\ 406,55$$

✓ $i = 6$
✓ substitution / *vervanging*
✓ answer / *antwoord*
(3)

8.2
$$1+7,5\% = \left(1+\frac{i_{nom}}{4}\right)^n$$
$$\sqrt[4]{\frac{43}{40}} = \left(1+\frac{i_{nom}}{4}\right)^4$$
$$\sqrt[4]{\frac{43}{40}} - 1 = \frac{i_{nom}}{4}$$
$$i_{nom} = 4\left(\sqrt[4]{\frac{43}{40}} - 1\right)$$
$$i_{nom} = 0,07297\ldots$$
$$i_{rate} = 7,30\%$$

✓ substitution / *vervanging*
✓ i_{nom} subject of equation / i_{nom} *onderwerp van formule*
✓ i_{rate}
(3)

8.3
$$A = \left[25\ 000\left(1+\frac{4\%}{12}\right)^{24} + 10\ 000\right]\left(1+\frac{7\%}{2}\right)^6 - 5000\left(1+\frac{7\%}{2}\right)^2$$
$$A = R40\ 222,91$$

✓ $n = 24\ ;\ 6$ and/*en* 2
✓ $25\ 000\left(1+\frac{4\%}{12}\right)^{24}$
✓ $+10000$ to $25\ 000\left(1+\frac{4\%}{12}\right)^{24}$
✓ subtracting 5000 with its interest / *aftrekking van 5000 met rente*
✓ answer / *antwoord*
(5)

OR / *OF*

$$A = \left[\left[25\ 000\left(1+\frac{4\%}{12}\right)^{24} + 10000\right]\left(1+\frac{7\%}{2}\right)^4 - 5000\right]\left(1+\frac{7\%}{2}\right)^2$$
$$A = R40\ 222,91$$

✓ $n = 24\ ;\ 4$ and/*en* 2
✓ $25\ 000\left(1+\frac{4\%}{12}\right)^{24}$
✓ $+10000$ to $25\ 000\left(1+\frac{4\%}{12}\right)^{24}$
✓ $P\left(1+\frac{7\%}{2}\right)^2$
✓ answer / *antwoord*
(5)

8.4

Option 1 : annual compounding
* Amount after 2 years: $x(1+0,12)^2$
* Brian pays 5 000, leaving: $x(1+0,12)^2 - 5\ 000$
* Amount after another 2 years: $\left(x(1+0,12)^2 - 5\ 000\right)(1+0,12)^2$

Option 2 : semi-annual compounding
* Amount after 1 year: $x(1+0,06)^2$
* Brian pays 3 000, leaving: $x(1+0,06)^2 - 3\ 000$
* Amount after another 2 years: $\left(x(1+0,06)^2 - 3\ 000\right)(1+0,06)^4$

Times lines for both options
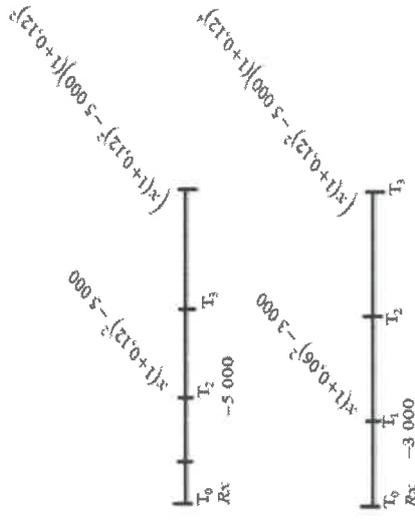
✓ $x(1+0,12)^2 - 5\ 000$
and/*en* $x(1+0,06)^2 - 3\ 000$
✓ $\left(x(1+0,12)^2 - 5\ 000\right)(1+0,12)^2$
✓ $\left(x(1+0,06)^2 - 3\ 000\right)(1+0,06)^4$

$$\left(x(1+0,12)^2 - 5000\right)(1+0,12)^2 = \left(x(1+0,06)^2 - 3000\right)(1+0,06)^4$$
$$\left(x(1,12)^2 - 5000\right)(1,12)^2 = \left(x(1,06)^2 - 3000\right)(1,06)^4$$
$$x(1,12)^4 - 5000(1,12)^2 = x(1,06)^6 - 3000(1,06)^4$$
$$-5000(1,12)^2 + 3000(1,06)^4 = x(1,06)^6 - x(1,12)^4$$
$$-2484,56912 = -0,1550002477x$$
$$x = R16029,45$$

✓ equating both options / *gelykstel van opsies*
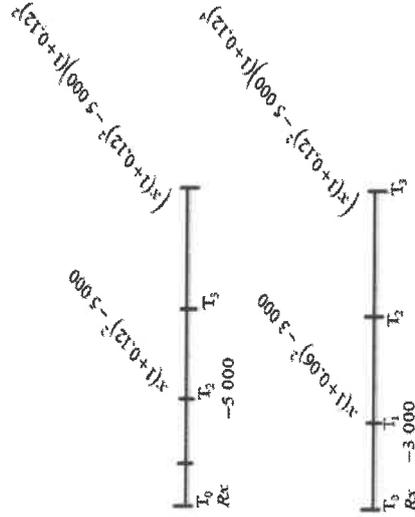✓ distribution by / *uitbreiding* $(1,12)^2$ and / *en* $(1,06)^2$
✓ answer / *antwoord*
(6)
[17]

Opsie 1 : jaarliks saamgestel

* Bedrag na 2 jaar: $x(1+0,12)^2$ ✓ $x(1+0,12)^2$

* Brian betaal 5 000, dit laat: $x(1+0,12)^2 - 5\,000$ and/en $x(1+0,12)^2 - 5\,000$

* Bedrag na 'n verdere 2 jaar: $\left(x(1+0,12)^2 - 5\,000\right)(1+0,12)^2$ ✓ $\left(x(1+0,12)^2 - 5\,000\right)(1+0,12)^2$

Opsie 2 : half - jaarliks saamgestel

* Bedrag na 1 jaar: $x(1+0,06)^2$

* Brian betaal 3 000, dit laat: $x(1+0,06)^2 - 3\,000$

* Bedrag na 'n verdere 2 jaar: $\left(x(1+0,06)^2 - 3\,000\right)(1+0,06)^4$ ✓ $\left(x(1+0,06)^2 - 3\,000\right)(1+0,06)^4$

Tydlyne vir beide opsies:

[timelines with $T_0 \dots T_5$, Rx, $-5\,000$, $x(1+0,12)^2 - 5\,000$, $\left(x(1+0,12)^2 - 5\,000\right)(1+0,12)^2$ and $T_0 \dots T_3$, Rx, $-3\,000$, $x(1+0,06)^2 - 3\,000$, $\left(x(1+0,06)^2 - 3\,000\right)(1+0,06)^4$]

$\left(x(1+0,12)^2 - 5\,000\right)(1+0,12)^2 = \left(x(1+0,06)^2 - 3000\right)(1+0,06)^4$

$\left(x(1,12)^2 - 5000\right)(1,12)^2 = \left(x(1,06)^2 - 3000\right)(1,06)^4$

$x(1.12)^4 - 5000(1,12)^2 = x(1,06)^6 - 3000(1,06)^4$

$-5000(1,12)^2 + 3000(1,06)^4 = x(1,06)^6 - x(1,12)^4$
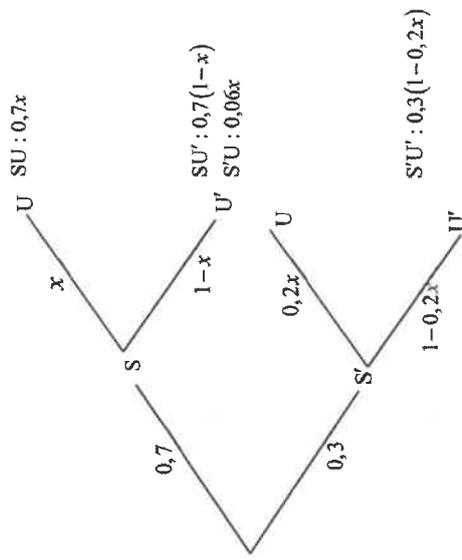
$-2484,56912 = -0,1550002477x$

$x = R16029,45$

✓ equating both options / gelykstel van opsies
✓ distribution by / uitbreiding $(1,12)^2$ and/en $(1,06)^2$
✓ answer /antwoord
(6)

[17]

QUESTION/VRAAG 9

9.1.1	NO / NEE $\quad P(A)\times P(B) = 0,3\times 0,6$ $= 0,18$ $\therefore P(A \text{ and / } en \ B) = 0,18 \neq 0$	✓ NO / NEE ✓ valid reason / geldige rede (2)
9.1.2	[Venn diagram: circles A and B, values $0,12$, $0,18$, $0,42$ inside, $0,28$ outside, $S=1$]	✓ $0,18$ ✓ $0,12$ and/en $0,42$ ✓ $0,28$ (3)
9.1.3	$P(\text{not } A \text{ and not } B) = P\left[\text{not}(A \text{ or } B)\right] = 0,28$ $P(\text{nie } A \text{ en nie } B) = \left[\text{nie}(A \text{ of } B)\right] = 0,28$	✓✓ answer / antwoord (2)
9.2.1	$\dfrac{42}{106} = \dfrac{21}{53}$	✓ answer / antwoord (1)
9.2.2	$P(\text{Enjoy jogging/Geniet draf}) = \dfrac{56}{106}$ $P(\text{Male/Manlik}) = \dfrac{42}{106}$ $P(\text{Enjoy jogging/Geniet draf})\times P(\text{Male/Manlik}) = \dfrac{56}{106}\times\dfrac{42}{106}$ $= 0,20932...$ $P(\text{Enjoy jogging and Male/Geniet draf en Manlik}) = \dfrac{26}{106}$ $= 0,24528...$ $\therefore P(\text{Enjoy jogging and Male/Geniet draf en Manlik})$ $\neq P(\text{Enjoy jogging/Geniet draf})\times P(\text{Male/Manlik})$ $\therefore$ Events are not independent. / Gebeurtenisse is nie onafhanklik nie.	$P(\text{Enjoy jogging})\times P(\text{Male})$ / $P(\text{Geniet draf}) \times P(\text{Manlik})$ ✓ answer / antwoord ✓ $P(\text{Enjoy jogging and Male})$ / $P(\text{Geniet draf en Manlik})$ ✓ conclusion / slotsom (4)

9.3.1

Sunny / Sonnig	- S
Not Sunny / Nie Sonnig nie	- S'
Use Sunscreen / Gebruik Sonskerm	- U
Not using Sunscreen / Gebruik nie sonskerm nie	- U'

Tree diagram:

0,7 → S
- x → U : SU : $0,7x$
- $1-x$ → U' : SU' : $0,7(1-x)$

0,3 → S'
- $0,2x$ → U : S'U : $0,06x$
- $1-0,2x$ → U' : S'U' : $0,3(1-0,2x)$

✓ First branches i.e. S and S' / Eerste takke dws S en S'

✓ Second branches i.e. U and U' / Tweede takke dws U en U'

✓ outcomes / uitkomste

(3)

9.3.2

$0,7x + 0,06x = 0,62$

$0,76x = 0,62$

$x = 0,82$

✓ $0,7x + 0,06x$

✓ $= 0,62$

✓ answer / antwoord

(3)

[18]

TOTAL / TOTAAL: **150**