

Vraag 1

1.1.1 $T_{18} = a + 17d = 32$

$T_{10} = a + 9d = 8$

$8d = 24$
 $d = 3$ (4)

1.1.2

$a + 17(3) = 32$ / $a + 9(3) = 8$

$a = 32 - 51$ / $a = 8 - 27$

$a = -19$ / $a = -19$ (3)

$R_y -19, -16, -13$

1.1.3

$T_{15} = a + 14d$

$= -19 + 14(3)$

$= -19 + 42$

$= 23$ (3)

1.2. $T_n = a + (n-1)d$

$128 = 3 + (n-1)(5)$

$128 = 3 + 5n - 5$

$130 = 5n$

$26 = n$ (6)

1.3. $S_n = \frac{n}{2} [2a + (n-1)d]$

$= \frac{18}{2} [2(6) + (18-1)(-4)]$

$= 9(12 + 19(-4))$

$= 9(12 - 76)$

$= 9(-64)$

$= -576$ (6)

[22] ✓

Vraag 2

2.1.1

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

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

$(x-2)(x+3) = (x+1)(x+1)$

$x^2 + x - 6 = x^2 + 2x + 1$

$x = -7$ (5)

2.1.2

$T_1 = -4$

2.1.3

$T_2 = -6$

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

$T_3 = -9$

(4)

2.2

$T_n = ar^{n-1}$

$9 = \frac{1}{8} (3)^{n-1}$

$729 = 3^{n-1}$

$3^6 = 3^{n-1}$

$7 = n$ (6)

2.3

$T_8 = dr^7$

$896 = 9(2)^7$

$896 = 9(128)$

$7 = a$ (5)

[20] ✓

Vraag 3:

3.1.1

$\frac{\sqrt{180}}{\sqrt{125} - \sqrt{20}}$

① opbreuk van getalle.

$= \frac{6\sqrt{5}}{5\sqrt{5} - 2\sqrt{5}}$

$= \frac{6\sqrt{5}}{3\sqrt{5}}$

$= 2$ (6)

3.1.2

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

$= \frac{3^{2x} (3 \cdot 2 - 3^{-1})}{3^{2x} (1 \cdot 2 - 1)}$

$= \frac{6 - \frac{1}{3}}{2 - 1}$

$= 5\frac{2}{3}$ (7)

3.1.3

$\frac{8^{2x-1} \cdot 4^{1-x}}{2^{2x+1}}$

① opbreuk van 8 en 4.

$= \frac{2^{3(2x-1)} \cdot 2^{2(1-x)}}{2^{2x+1}}$

$= \frac{2^{6x-3} \cdot 2^{2-2x}}{2^{2x+1}}$

$= 2^{2x-1}$

$= 2^{-2}$ (6)

$= \frac{1}{4}$ (6)

3.1.4

$81^{\frac{1}{5}} + 25^{\frac{1}{5}}$

$= (3^4)^{\frac{1}{5}} + (5^2)^{\frac{1}{5}}$

$= 3^{\frac{4}{5}} + 5^{\frac{2}{5}}$

$= 5$ (8)

3.2.1

$9^x = \frac{1}{27}$
 $\therefore 3^{2x} = 3^{-3}$

$\therefore 2x = -3$

$\therefore x = -\frac{3}{2}$ (4)

3.2.2

$3 \cdot 2^x = 48$

$\therefore \frac{3 \cdot 2^x}{3} = \frac{48}{3}$

$\therefore 2^x = 16$ (3)

$\therefore 2^x = 2^4$ (4)

$\therefore x = 4$ (3)

[20] ✓

Vraag 4 / Question 4 :

4.1.1

$3 \log_6 2 + \log_6 45 - \log_6 10$

$= \log_6 2^3 + \log_6 45 - \log_6 10$

$= \log_6 8 + \log_6 45 - \log_6 10$

$= \log_6 \frac{8(45)}{10}$

$= \log_6 \frac{360}{10}$

$= \log_6 36$

$= 2 \log_6 6$

$= 2$ (6)

4.1.2

$\log_6 2 + \log_3 27 + \log_4 1 - \frac{\log 81}{\log 9}$

$= \frac{\log 2}{\log 6} + 3 \log_3 3 + 0 - \frac{4 \log 3}{2 \log 3}$

$= \frac{\log 2}{4 \log 3} + \frac{3 - 2}{1}$

$= \frac{1}{4} + 1$

$= 1\frac{1}{4}$ (8)

4.2.1

$\log_2 x = 5$

$\therefore 2^5 = x$

$\therefore x = 32$ (2)

4.2.2

$\log_{25} 5 = x$

$\therefore 5^{2x} = 5$

$\therefore 2x = 1$

$\therefore x = \frac{1}{2}$ (4)

4.3

$5^x = 28$

$\therefore \log_5 28 = x$

$\therefore \frac{\log 28}{\log 5} = x$

$\therefore x = \frac{1}{5}$ (4)

4.3

$5^x = 28$

$\therefore \log_5 28 = x$

$\therefore \frac{\log 28}{\log 5} = x$

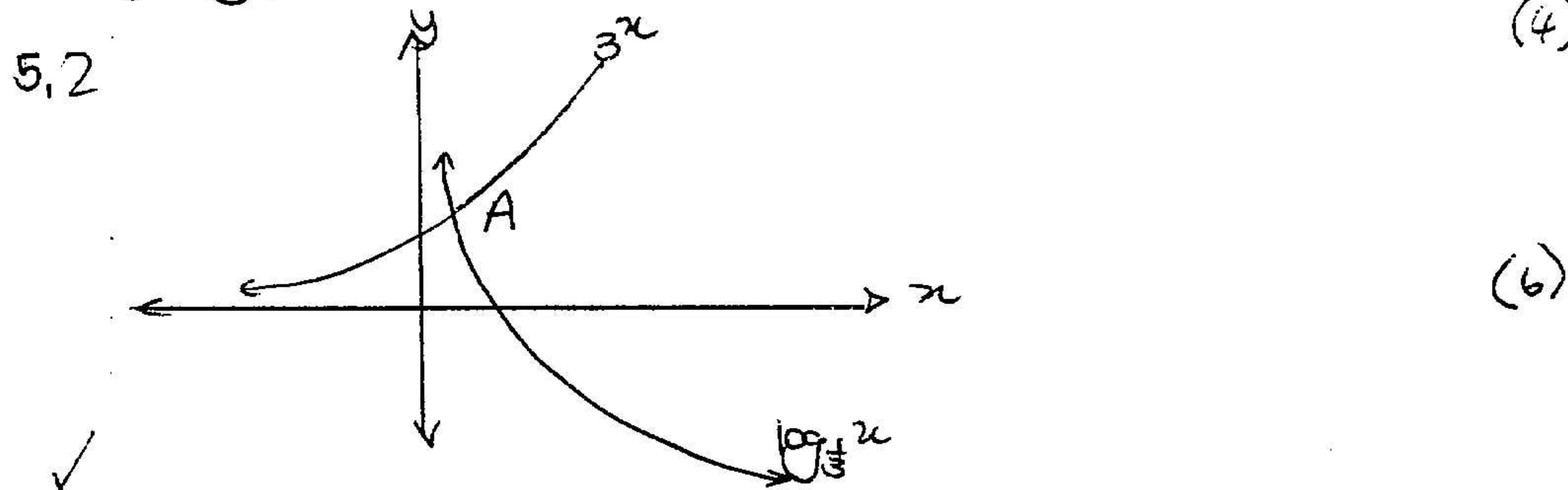
$\therefore x = 2.07$ (3)

[23] ✓

Vraag 5

5.1

	-2	-1	0	1	2
$y=3^x$	0,1	0,3	1	3	9
$y=\log_3 x$	9	3	1	0,3	0,1



5.3.1 $x = 0$ (2)

5.3.2 $x = 9$ (2)

5.3.3 A op grafiek (1)

[15] ✓

6.4
6.4.1 $g'(x) = -3 - 2x$ (2)

6.4.2 $g(x) = -x^3 + x$ (4)
 $g'(x) = -3x^2 + 1$

6.5.1 $f(i) = 2(i)^2 + 1 - 1$
 $= 2$ (1)

6.5.2 $f'(x) = 4x + 1$ (1)

6.5.3 $f'(1) = 4(1) + 1$
 $= 5$ (1)

6.5.4 $y - y_1 = m(x - x_1)$
 $y - 2 = 5(x - 1)$ (1)
 $\therefore y = 5x - 5 + 2$
 $\therefore y = 5x - 3$ (1) [25] ✓

VRAAG/QUESTION 6

6.1 Av. Grad. = $\frac{-12+3}{2-1} = -9$ (1)

6.2 $\lim_{x \rightarrow 3} \frac{x+3}{x^2+3x}$ (3)

$\lim_{x \rightarrow 3} \frac{x+3}{x(x+3)}$ (1)

$\lim_{x \rightarrow 3} \frac{1}{x} = \frac{1}{3}$ (1)

6.3 $-f(x) = 4x + 1$
 $f(x+h) = 4(x+h) + 1$
 $= 4x + 4h + 1$ (1)

$f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$ (1)

$= \lim_{h \rightarrow 0} \frac{4x + 4h + 1 - (4x + 1)}{h}$ (1)

$= \lim_{h \rightarrow 0} \frac{4x + 4h + 1 - 4x - 1}{h}$ (1)

$= \lim_{h \rightarrow 0} \frac{4h}{h} = 4$ (1)

(6)

Üb 7

7.1 Koordinate von C

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

Set $f(x) = 0$

$$\therefore 0 = x^3 - 3x^2$$

$$0 = x^2(x - 3)$$

$$x = 0 \text{ or } x - 3 = 0$$

$$x = 3$$

$\therefore C(3, 0)$

(5)

7.2 Koordinate von A en B

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

$$f'(x) = 3x^2 - 6x$$

Set $f'(x) = 0$

$$\therefore 3x^2 - 6x = 0$$

$$3x(x - 2) = 0$$

$$3x = 0 \text{ or } x - 2 = 0$$

$$x = 0$$

$$x = 2$$

Wendung: $f(0) = 0^3 - 3(0)^2 = 0$
 $\therefore A(0, 0)$

$$f(2) = 2^3 - 3(2)^2$$

$$= 8 - 12$$

$$= -4$$

$$\therefore B(2, -4)$$

(10)

(5)