

Vraag 1:

1.1.1. $T_3 - T_2 = T_2 - T_1$
 $x - 1 - (x+2) = (x+2) - (3x-1)$
 $-3 = -2x + 3$
 $2x = 6$
 $x = 3$ (5)

1.1.2. $T_1 = 8$, $T_2 = 5$, $T_3 = 2$
 $d = -3$ (4)

1.2.1. $T_{30} = a + 29d$
 $= -7 + 29(-5)$
 $= -7 - 145$
 $= -152$ (3)

1.2.2. $S_n = \frac{n}{2} [2a + (n-1)d]$
 $= \frac{12}{2} [2(-7) + (12-1)(-5)]$
 $= 6(-14 + 1(-5))$
 $= 6(-14 - 5)$
 $= 6(-19)$
 $= -114$ (6)

1.3. $T_n = 6n^2 - 7$
 $= 6(8)^2 - 7$
 $= 48^2 - 7$
 $= 41^2$ (3)

1.4. $41 = 7 + (n-1)2$
 $\therefore 41 = 7 + 2n - 2$
 $\therefore -2n = -36$
 $\therefore n = 18$ (5) [26]

Vraag 2:

2.1.1. $T_8 = ar^7 = 1448$
 $T_4 = ar^3 = 28$
 $r^4 = 16$
 $r^4 = 2^4$
 $r = 2$ (5)

2.1.2. $a(2)^3 = 28$
 $a(8) = 28$
 $a = 3\frac{1}{2}$ (3)

2.2. $S_n = \frac{a(r^n - 1)}{r - 1}$
 $= \frac{4(3^6 - 1)}{3 - 1}$
 $= \frac{4(728)}{2}$
 $= 1456$ (4)

2.3. $T_n = ar^{n-1}$
 $128 = 4(2)^{n-1}$
 $32 = 2^{n-1}$
 $2^5 = 2^{n-1}$
 $6 = n$ (6)

2.4. $T_n = \frac{1}{8}(6)^{n-1}$
 $= \frac{1}{8}(2)^{7-1}$
 $= \frac{1}{8}(2)^6$
 $= \frac{1}{8}(64) = 8$
 (21) (3)

Vraag 3 / Question 3:

3.1.1. $\frac{32^{\frac{2}{5}} \cdot 8^{-\frac{2}{3}}}{8^{\frac{3}{4}}}$
 $= \frac{(2^5)^{\frac{2}{5}} \cdot (2^3)^{-\frac{2}{3}}}{(2^3)^{\frac{3}{4}}}$
 $= \frac{2^2 \cdot 2^{-2}}{2^{\frac{9}{4}}}$
 $= \frac{4 \cdot \frac{1}{4}}{2^{\frac{9}{4}}}$
 $= \frac{1}{2^{\frac{9}{4}}}$ (5)

3.1.2. $\frac{2^{x-1} \cdot 8^{x+2}}{16^{x-1}}$
 $= \frac{2^{x-1} \cdot 2^{3(x+2)}}{2^{4(x-1)}}$
 $= \frac{2^{x-1} \cdot 2^{3x+6}}{2^{4x-4}}$
 $= \frac{2^{x-1+3x+6}}{2^{4x-4}}$
 $= \frac{2^{4x+5}}{2^{4x-4}}$
 $= 2^{4x+5-4x+4}$
 $= 2^9$
 $= \frac{1}{8}$ (5)

3.1.3. $\sqrt{75} - \sqrt{27} + 2\sqrt{12}$
 $= \sqrt{25 \cdot 3} - \sqrt{9 \cdot 3} + 2\sqrt{4 \cdot 3}$
 $= 5\sqrt{3} - 3\sqrt{3} + 4\sqrt{3}$
 $= 6\sqrt{3}$ (5)

3.2.1. $\frac{4^{2x} = 8^{3x-5}}{2^{2(2x)} = 2^{3(2x-5)}}$ - opbreuk
 $\therefore 4x = 3x - 5$ - uitmaal
 $\therefore 4x - 3x = -5$ - oplosstel
 $\therefore x = -5$ (4)

3.2.2. $\frac{1}{5}x^{\frac{1}{5}} = 2$
 $\therefore \frac{1}{5}x^{\frac{1}{5}} = 2$
 $\therefore x^{\frac{1}{5}} = 10$
 $\therefore (x^{\frac{1}{5}})^5 = 10^5$
 $\therefore x = 100000$ (2)

Vraag 4:

4.1.1. $2 \log_4 32$
 $= \frac{2 \log 2^5}{\log 2^2}$
 $= \frac{10}{2}$
 $= 5$ (3)

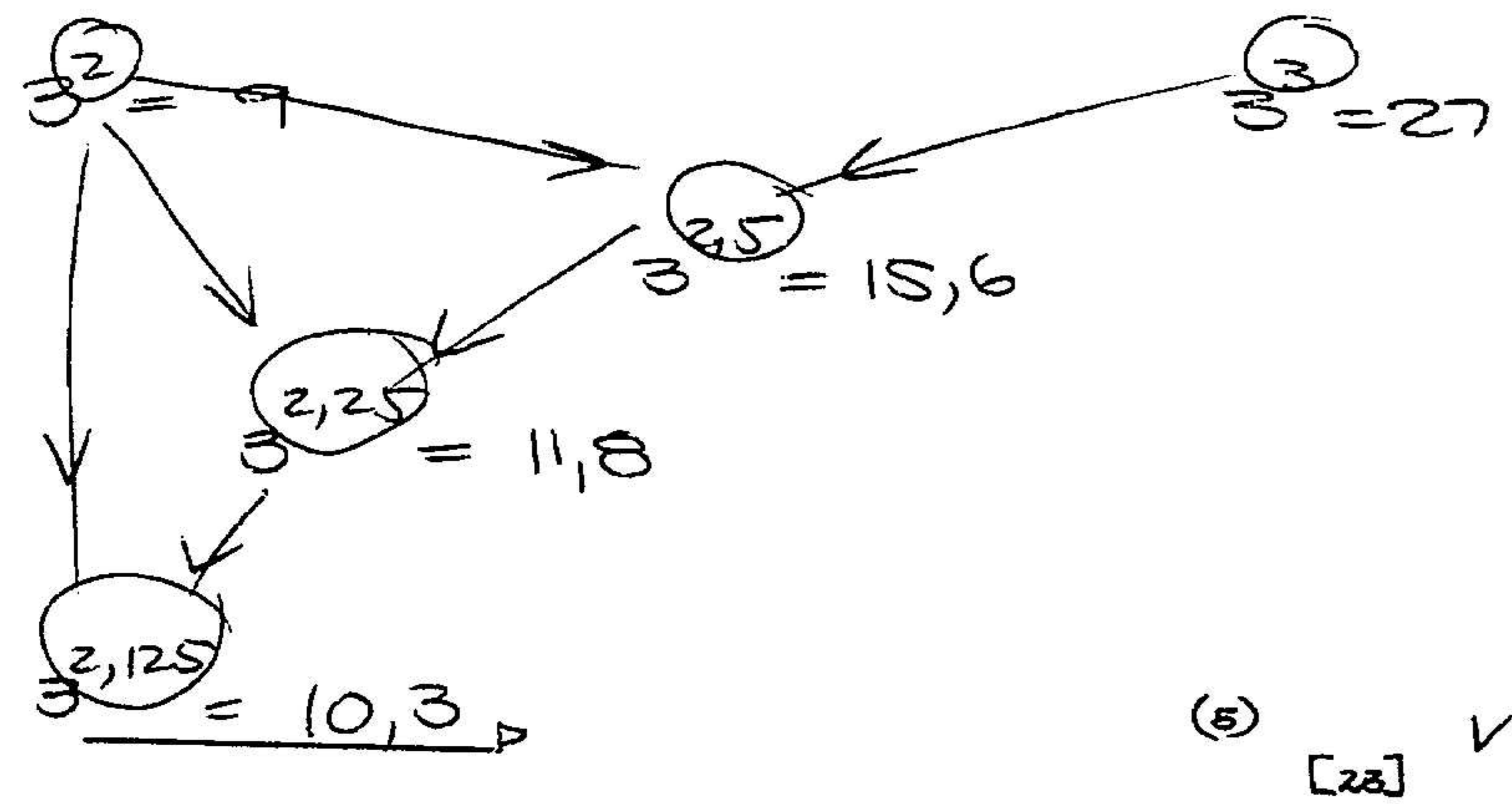
4.1.2. $5 \log 2 + 2 \log 5 - \log 8$
 $= \log 2^5 + \log 5^2 - \log 8$
 $= \log (2^5 \cdot 5^2 \div 8)$
 $= \log 100$
 $= 2$ (5)

4.3. $\log_9 \sqrt{9} + 2 \log 1 - \log_6 36$
 $= \frac{\log 9^{\frac{1}{2}}}{\log 9} + 0 - \frac{\log 6^2}{\log 6}$
 $= \frac{1}{2} + 0 - 2 = -\frac{3}{2}$ (6)

4.2.1. $\log x - 1 = 2$
 $\log x = 3$
 $x = 1000$ (2)

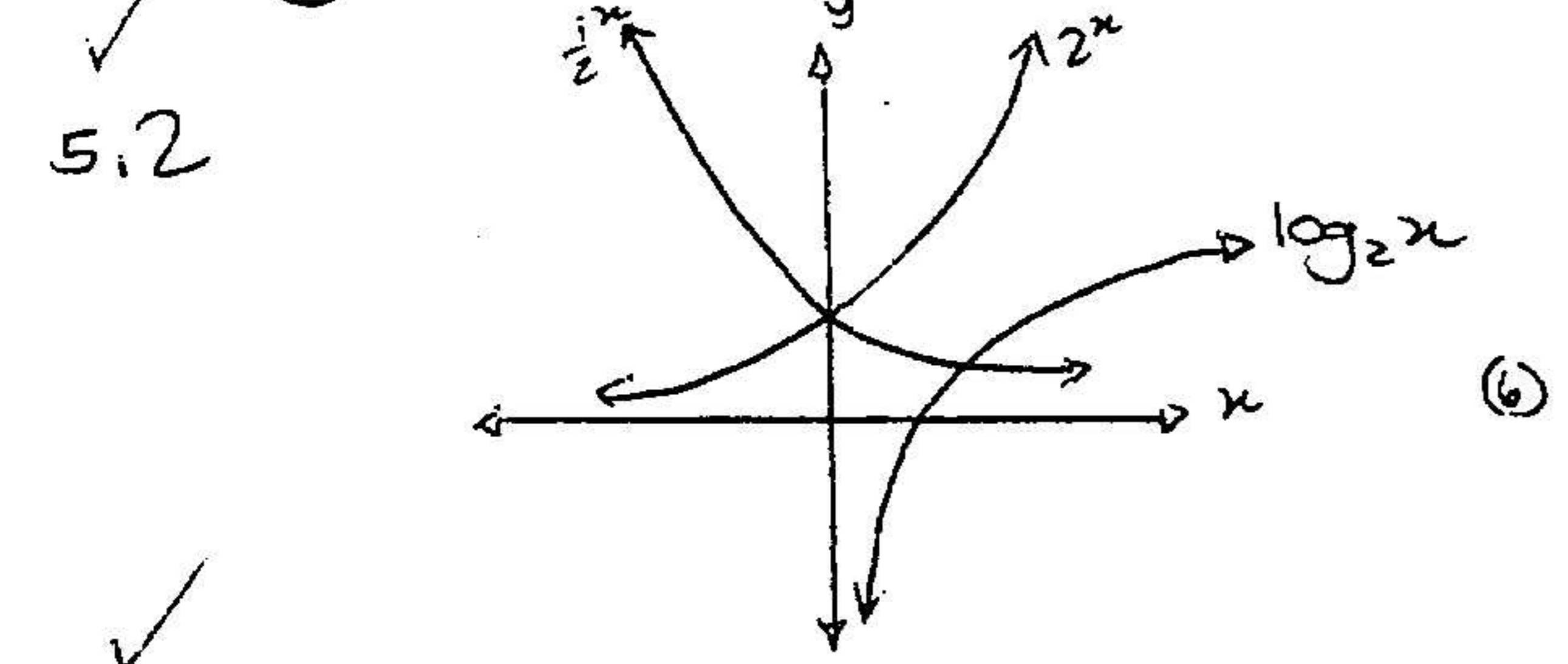
4.2.2 $3^{x+2} = 243$
 $x+2 = \frac{\log 243}{\log 3}$
 $x+2 = 5$
 $x = 3$ (2)

4.3. $3^x = 10$



Vraag 5:

5.1		-2	-1	0	1	2
	$y=2^x$	0,25	0,5	1	2	4
	$y=\frac{1}{2}x$	4	2	1	0,5	0,25



5.3 Simmetrie (2)

- 5.4.1 $\alpha=0$ (1) ✓
- 5.4.2 $\alpha=-1$ (1) ✓
- 5.4.3 $\alpha=1$ (1) ✓

VR/Q.6

6.1 $\lim_{x \rightarrow -2} x^2 - 3x + 2$
 $\lim_{x \rightarrow -2} (-2)^2 - 3(-2) + 2 = 12$ (2)

6.2 $f(x) = x^2 + 3$
 $f(x+h) = (x+h)^2 + 3 = x^2 + 2hx + h^2 + 3$

$f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$
 $= \lim_{h \rightarrow 0} \frac{x^2 + 2hx + h^2 + 3 - (x^2 + 3)}{h}$
 $= \lim_{h \rightarrow 0} \frac{2hx + h^2}{h}$
 $= \lim_{h \rightarrow 0} (2x + h) = 2x$ (6)

6.3 $g'(x) = x^2 + 8x$ (2)
 $g'(1) = 4 + 8 = 12$ (2)

6.4 $f(x) = 3x^2 - x + 2$
 $f(1) = 3(1)^2 - (1) + 2 = 4$ (1)
 $f'(x) = 6x - 1$ (2)

6.4.3 $f'(1) = 6(1) - 1 = 5$ (1)
 $y - y_1 = m(x - x_1)$
 $4 - 4 = 5(x - 1)$
 $y = 5x - 1$ (4) [50] ✓

VR/Q.7

7.1 $f(t) = 80t - 5t^2$
 for max / vir mak $f'(t) = 0$
 $80 - 10t = 0$
 $t = 8$ sec/sec (3)

7.1.2 $f(8) = 80(8) - 5(8)^2 = 640 - 320 = 320$ (2)

7.1.3 $f'(t) = 80 - 10t$
 $f'(3) = 80 - 10(3) = 50$ m/s (2) [7] ✓

Progs / Questions:

Q1. $h(x) = x^3 - 6x^2$

x-axis asmit (y=0)

y-axis asmit

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

$$0 = x^2(x-6)$$

✓ $x=0$ ① of $x=6$ ①.

$$h(0) = 0^3 - 6(0)^2 = 0$$

③

Q2. $h(x) = x^3 - 6x^2$
 $h'(x) = 3x^2 - 12x$

$$0 = 3x^2 - 12x$$

$$0 = 3x(x-4)$$

$$3x=0 \quad \text{of} \quad x-4=0$$

$$x=0$$

$$x=4$$

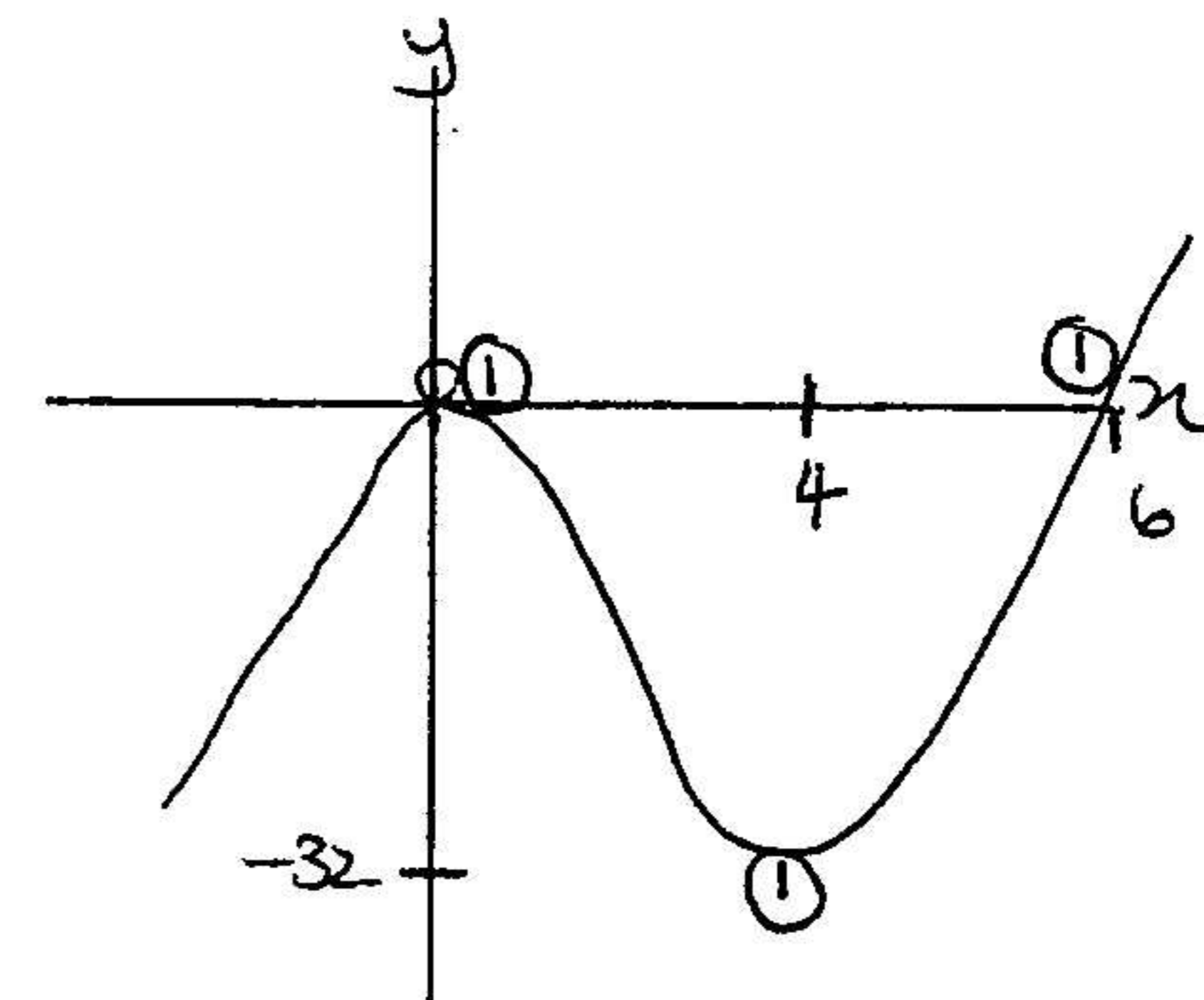
$$h(0) = (0)^3 - 6(0)^2 = 0$$

$$h(4) = 4^3 - 6(4)^2 = -32$$

✓ $(0,0)$ ① $(4,-32)$

⑦

Q3.



⑧