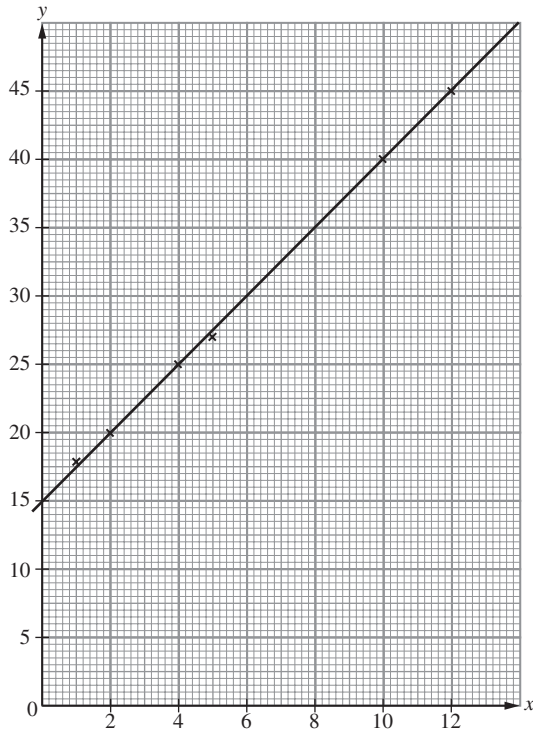


Penyelesaian Lengkap

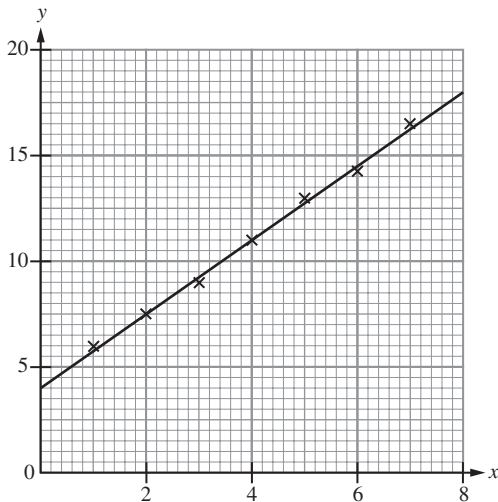
Praktis 6

Praktis Formatif

1



2 (a)



$$(b) m = \frac{18-4}{8-0}$$

$$= \frac{7}{4}$$

$$c = 4$$

$$y = \frac{7}{4}x + 4$$

$$3 (a) m = -\frac{4}{6}$$

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

$$c = 4$$

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

$$(b) (i) x = -3, y = -\frac{2}{3}(-3) + 4$$

$$y = 6$$

$$(ii) y = 10, -\frac{2}{3}x + 4 = 10$$

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

$$x = -9$$

$$4 \quad 2y = 6x - x^2$$

$$\div 2x, \frac{y}{x} = 3 - \frac{1}{2}x$$

$$X = x$$

$$Y = \frac{y}{x}$$

$$5 \quad y = \sqrt{\frac{ax^2 + b}{x^2}}$$

$$y^2 = \frac{ax^2 + b}{x^2}$$

$$y^2 = a + \frac{b}{x^2}$$

$$y^2 = b\left(\frac{1}{x^2}\right) + a$$

$$\downarrow \quad \downarrow \quad \downarrow \quad \downarrow$$

$$Y = mX + c$$

Plot y^2 melawan $\frac{1}{x^2}$ / Plot y^2 against $\frac{1}{x^2}$

$$6 (a) m = \frac{6-4}{2-6}$$

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

$$Y - 6 = -\frac{1}{2}(X - 2)$$

$$Y = -\frac{1}{2}X + 7$$

$$\frac{1}{y} = -\frac{1}{2}x^2 + 7$$

$$\frac{1}{y} = \frac{14 - x^2}{2}$$

$$y = \frac{2}{14 - x^2}$$

(b) $\frac{1}{y} = -\frac{1}{2}x^2 + 7$
 $\frac{1}{-1} = -\frac{1}{2}x^2 + 7$
 $\frac{1}{2}x^2 = 8$
 $x^2 = 16$
 $x = \pm 4$

7 (a) Kaedah/Method 1:

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

$$Y = 3X + 6$$

$$y = \frac{3}{x} + 6$$

$$\times \sqrt{x}, y\sqrt{x} = 6\sqrt{x} + \frac{3}{\sqrt{x}}$$

$$y\sqrt{x} = a\sqrt{x} + \frac{b}{\sqrt{x}}$$

Dengan perbandingan/By comparison, $a = 6$
 $b = 3$

Kaedah/Method 2:

$$y\sqrt{x} = a\sqrt{x} + \frac{b}{\sqrt{x}}$$

$$\div \sqrt{x}, y = b\left(\frac{1}{x}\right) + a$$

$$\downarrow \quad \downarrow \quad \downarrow \quad \downarrow$$

$$Y = mX + c$$

$$a = 6$$

$$b = 3$$

(b) $y\sqrt{x} = 6\sqrt{x} + \frac{3}{\sqrt{x}}$
 $\times \sqrt{x}, xy = 6x + 3$
 $m = 6$

8 (a) $y = 5x^2 - 4x$
 $\div x^2, \frac{y}{x^2} = -\frac{4}{x} + 5$
 $\frac{y}{x^2} = -4\left(\frac{1}{x}\right) + 5$
 $\downarrow \quad \downarrow \quad \downarrow \quad \downarrow$
 $Y = mX + c$

(b) $k = 5$
 $\frac{p-5}{4-0} = -4$
 $p-5 = -16$
 $p = -11$

atau/or

$$Y = -4X + 5$$

Gantikan/Substitute (4, p), $p = -4(4) + 5$
 $p = -11$

9 (a) $y = \frac{k}{x} - \frac{2}{x^2}$
 $\times x^2, x^2y = kx - 2$
 $\downarrow \quad \downarrow \quad \downarrow$
 $Y = mX + c$

(b) $h = -2$
 $k = \frac{4 - (-2)}{6 - 0}$
 $k = 1$

atau/or

$$Y = kX - 2$$

Gantikan/Substitute (6, 4), $4 = 6k - 2$
 $k = 1$

10 (a) $m = \frac{3.3 - 0.3}{4 - 0}$
 $= \frac{3}{4}$ atau/or 0.75
 $c = 0.3$

$$\frac{y}{\sqrt{x}} = 0.75\sqrt{x} + 0.3$$

$$\times \sqrt{x}, y = 0.75x + 0.3\sqrt{x}$$

(b) $x = 8, \sqrt{x} = 2.828$.

Daripada graf/From the graph, $\frac{y}{\sqrt{x}} = 2.4$
 $y = 2.4\sqrt{8}$
 $= 6.788$

11 $\ln y = \ln ke^{\sqrt{x}}$
 $\ln y = \ln k + \ln e^{\sqrt{x}}$
 $\ln y = \ln k + \sqrt{x} \ln e$
 $\ln y = \sqrt{x} + \ln k$

Plot $\ln y$ melawan \sqrt{x} /Plot $\ln y$ against \sqrt{x}

12 (a) $\sqrt{y} = ax^n$
 $\log \sqrt{y} = \log ax^n$
 $\log y^{\frac{1}{2}} = \log a + \log x^n$
 $\frac{1}{2} \log y = n \log x + \log a$
 $\log y = 2n \log x + 2 \log a$
 $\downarrow \quad \downarrow \quad \downarrow \quad \downarrow$
 $Y = mX + c$

(b) Kecerunan/Gradient, $m = 2n$
Pintasan-y/y-intercept, $c = 2 \log a$

13 $m = \frac{11 - 2}{3 - 0} = 3$
 $Y = 3X + 2$
 $\log_3 y = 3x + 2$
 $y = 3^{3x+2}$
 $y = 9(27)^x$

14 (a) $y = N(2)^x$
 $\log_{10} y = \log_{10} N(2)^x$
 $= \log_{10} N + \log_{10} (2)^x$
 $= x \log_{10} 2 + \log_{10} N$
 $\log_{10} y = (\log_{10} 2)x + \log_{10} N$
 $\downarrow \quad \downarrow \quad \downarrow \quad \downarrow$
 $Y = mX + c$

(b) $\log_{10} N = 4$
 $N = 10\,000$

15 $m = \frac{1 - (-5)}{0 - 3} = -2$

Kaedah/Method 1:

$$Y = -2X + 1$$

$$\log_5 y = -2x + 1$$

$$y = 5^{-2x+1}$$

$$y = \frac{1}{25^x} \times 5$$

$$= \frac{5}{25^x}$$

$$= \frac{A}{p^x}$$

Dengan perbandingan/By comparison,

$$A = 5, p = 25$$

Kaedah/Method 2:

$$\log_5 y = \log_5 \frac{A}{p^x}$$

$$\log_5 y = \log_5 A - \log_5 p^x$$

$$\log_5 y = -x \log_5 p + \log_5 A$$

$$\log_5 y = (-\log_5 p)x + \log_5 A$$

$$\begin{array}{cccc} \downarrow & & \downarrow & \downarrow & \downarrow \\ Y = & m & X & + & c \end{array}$$

$$\log_5 A = 1$$

$$A = 5$$

$$-\log_5 p = -2$$

$$\log_5 p = 2$$

$$p = 5^2$$

$$p = 25$$

$$16 \text{ (a) } m = \frac{3-2}{1-6} = -\frac{1}{5}$$

$$Y - 3 = -\frac{1}{5}(X - 1)$$

$$Y = -\frac{1}{5}X + \frac{16}{5}$$

$$\lg N = -\frac{1}{5}t + \frac{16}{5}$$

$$\lg N = 3.2 - 0.2t$$

$$N = 10^{3.2 - 0.2t}$$

$$N = 10^{3.2} \times (10^{-0.2})^t$$

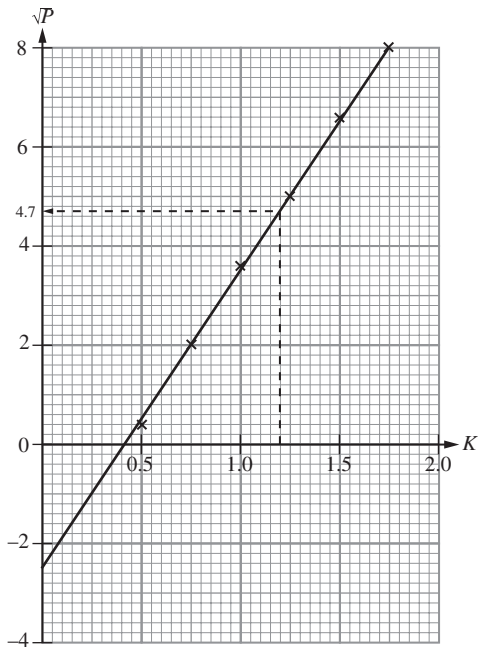
$$N = 1585(0.631)^t$$

$$16 \text{ (b) } N = 1585(0.631)^8$$

$$N = 39.83$$

$$= 40$$

17 (a)



$$16 \text{ (b) } P = \frac{4}{\mu^2}(K + A)^2$$

$$\sqrt{P} = \frac{2}{\mu}(K + A)$$

$$\sqrt{P} = \frac{2}{\mu}K + \frac{2A}{\mu}$$

$$\begin{array}{cccc} \downarrow & \downarrow & \downarrow & \downarrow \\ Y = mX + c \end{array}$$

$$(i) m = \frac{8 - (-2.5)}{1.75 - 0}$$

$$= 6$$

$$\frac{2}{\mu} = 6$$

$$\mu = \frac{1}{3}$$

$$c = -2.5,$$

$$\frac{2A}{\mu} = -2.5$$

$$\frac{1}{3}A = -\frac{5}{12}$$

(ii) Daripada graf/From the graph,

$$K = 1.2, \sqrt{P} = 4.7$$

$$P = 22.09$$

Praktis Sumatif

Kertas 1

$$1 \text{ } m = \frac{5.5 - 4.75}{2 - 5}$$

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

$$Y - 5.5 = -\frac{1}{4}(X - 2)$$

$$Y = -\frac{1}{4}X + \frac{1}{2} + 5.5$$

$$Y = -\frac{1}{4}X + 6$$

$$\frac{1}{y^2} = -\frac{1}{4}x^2 + 6$$

$$\frac{1}{y^2} = \frac{24 - x^2}{4}$$

$$y^2 = \frac{4}{24 - x^2}$$

$$y = \frac{2}{\sqrt{24 - x^2}}$$

Dengan perbandingan/By comparison,

$$p = 2$$

$$q = 24$$

Kaedah alternatif/Alternative method:

$$y = \frac{p}{\sqrt{q - x^2}}$$

$$y^2 = \frac{p^2}{q - x^2}$$

$$\frac{1}{y^2} = \frac{q - x^2}{p^2}$$

$$\frac{1}{y^2} = -\frac{1}{p^2}x^2 + \frac{q}{p^2}$$

$$\begin{array}{cccc} \downarrow & \downarrow & \downarrow & \downarrow \\ Y = mX + c \end{array}$$

$$Y = mX + c$$

$$-\frac{1}{p^2} = -\frac{1}{4}$$

$$p^2 = 4$$

$$p > 0, p = 2$$

$$\frac{q}{p^2} = 6$$

$$q = 6 \times 2^2$$

$$q = 24$$

$$2 \text{ (a) } y = \frac{2x}{3x^2 + h}$$

$$\frac{x}{y} = \frac{3x^2 + h}{2}$$

$$\frac{x}{y} = \frac{3}{2}x^2 + \frac{h}{2}$$

$$Y = \frac{3}{2}X + \frac{h}{2}$$

Gantikan/Substitute ($p, q + 1$),

$$q + 1 = \frac{3}{2}p + \frac{h}{2}$$

$$2q + 2 = 3p + h$$

$$h = 2q - 3p + 2$$

$$\text{(b) } \lg y = \frac{1}{2}x - 1$$

$$-u = -1$$

$$u = 1$$

$$\frac{3 - (-1)}{v - 0} = \frac{1}{2}$$

$$\frac{4}{v} = \frac{1}{2}$$

$$v = 8$$

atau/or

$$Y = \frac{1}{2}X - 1$$

Gantikan/Substitute ($v, 3$), $3 = \frac{1}{2}v - 1$
 $v = 8$

$$3 \text{ (a) } y = -\frac{3x}{1 + 6x}$$

$$\frac{1}{y} = -\frac{1 + 6x}{3x}$$

$$\frac{1}{y} = -\frac{1}{3}\left(\frac{1}{x}\right) - 2$$

$$Y = -\frac{1}{3}X - 2$$

Gantikan/Substitute ($3, s$), $s = -\frac{1}{3}(3) - 2$
 $= -3$

Gantikan/Substitute ($t, 1$), $1 = -\frac{t}{3} - 2$
 $t = -9$

$$\text{(b) } m = \frac{7 - 3}{5 - 3}$$

$$= 2$$

$$Y - 3 = 2(X - 3)$$

$$Y = 2X - 3$$

$$\log_2 y = 2 \log_2 x - 3 \log_2 2$$

$$\log_2 y = \log_2 x^2 - \log_2 8$$

$$\log_2 y = \log_2 \frac{x^2}{8}$$

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

$$4 \text{ (a) } y = (x + p)^2$$

$$\sqrt{y} = x + p$$

$$\downarrow \quad \downarrow \downarrow \quad \downarrow$$

$$Y = mX + c$$

$$c = -2$$

$$p = -2$$

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

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

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

$$\downarrow \quad \downarrow \downarrow \quad \downarrow$$

$$Y = mX + c$$

$$c = 4$$

$$q = 4$$

$$\text{(b) (i) } y = px^3$$

$$\lg y = \lg px^3$$

$$\lg y = \lg p + \lg x^3$$

$$\lg y = 3 \lg x + \lg p$$

$$\downarrow \quad \downarrow \downarrow \quad \downarrow$$

$$Y = mX + c$$

$$\text{(ii) } \lg p = 2$$

$$p = 100$$

$$\frac{q - 2}{3 - 0} = 3$$

$$q - 2 = 9$$

$$q = 11$$

atau/or

$$Y = 3X + 2$$

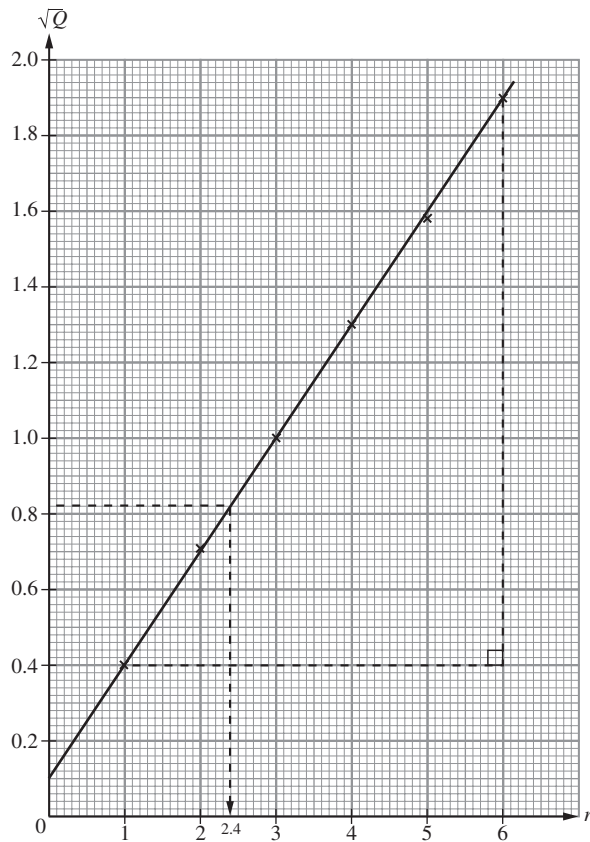
Gantikan/Substitute ($3, q$), $q = 3(3) + 2$
 $q = 11$

Kertas 2

1 (a)

r	1	2	3	4	5	6
\sqrt{Q}	0.39	0.71	1.00	1.30	1.58	1.90

(b)



(c) (i) $Q = 0.67, \sqrt{Q} = 0.82$
 Daripada Graf/From the graph, $r = 2.4 \pm 0.1$

(ii) $\frac{\sqrt{Q}}{r} = a + \frac{b}{r}$
 $\times r, \sqrt{Q} = ar + b$

Daripada Graf/From the graph,

$$m = \frac{1.9 - 0.4}{6 - 1} = 0.3 \pm 0.05$$

$$a = 0.3 \pm 0.05$$

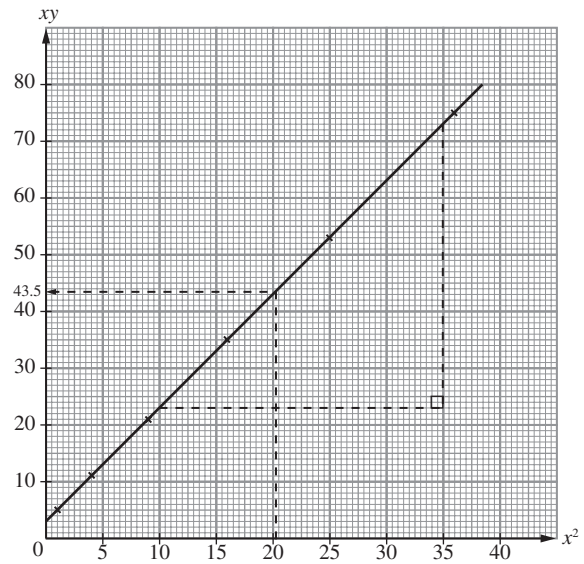
$$c = 0.1 \pm 0.02$$

$$b = 0.1 \pm 0.02$$

2 (a)

x^2	1	4	9	16	25	36
xy	5	11	21	35.2	53	75

(b)



(c) Daripada graf/From the graph,

(i) $x = 4.5, x^2 = 20.25$

$$xy = 43.5$$

$$4.5y = 43.5$$

$$y = 9.667$$

(ii) $m = \frac{73 - 23}{35 - 10} = 2 \pm 0.05$

$$c = 3 \pm 1$$

$$Y = 2X + 3$$

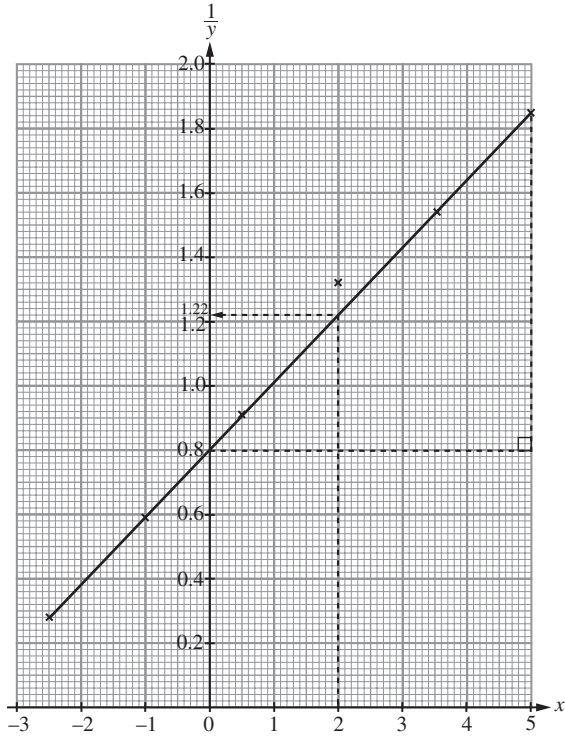
$$xy = 2x^2 + 3$$

$$\div x, y = 2x + \frac{3}{x}$$

3 (a)

x	-2.5	-1.0	0.5	2.0	3.5	5.0
$\frac{1}{y}$	0.28	0.59	0.91	1.32	1.54	1.85

(b)



$$(c) y = \frac{h}{x+k}$$

$$\frac{1}{y} = \frac{x+k}{h}$$

$$\frac{1}{y} = \frac{1}{h}x + \frac{k}{h}$$

(i) Daripada graf/From the graph, $y_{\text{salah/wrong}} = 0.76$

$$x = 2, \frac{1}{y} = 1.22$$

$$y_{\text{betul/correct}} = 0.82$$

(ii) Daripada graf/From the graph,

$$m = \frac{1.85 - 0.8}{5 - 0}$$

$$= 0.21 \pm 0.01$$

$$\frac{1}{h} = 0.21$$

$$h = 4.762$$

$$c = 0.8 \pm 0.02$$

$$\frac{k}{h} = 0.8$$

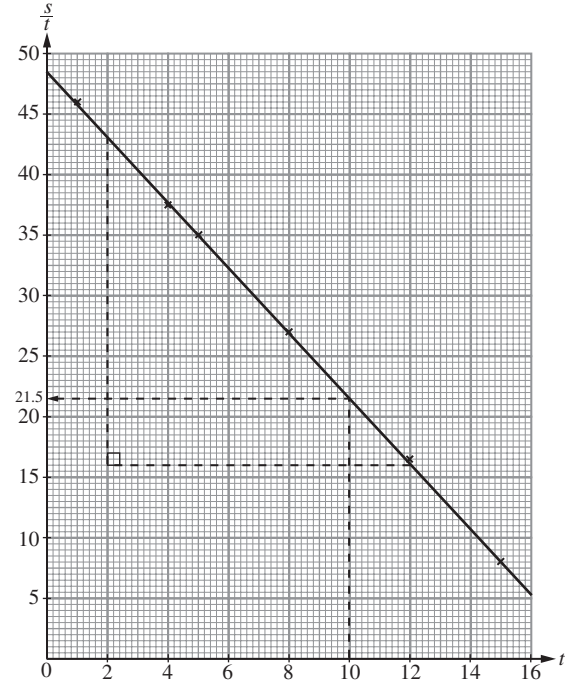
$$k = 0.8 \times 4.762$$

$$k = 3.810$$

4 (a)

t	1	4	5	8	12	15
$\frac{s}{t}$	46	37.5	35	27	16.5	8

(b)



$$(c) (i) s = ut + \frac{1}{2}at^2$$

$$\frac{s}{t} = \frac{1}{2}at + u$$

Daripada graf/From the graph,

$$m = \frac{43 - 16}{2 - 12}$$

$$= -2.70 \pm 0.1$$

$$\frac{1}{2}a = -2.7$$

$$a = -5.40 (-5.6 \text{ hingga/to } -5.2)$$

$$(ii) c = 48.5 \pm 0.5$$

$$u = 48.5 \pm 0.5$$

$$(iii) t = 10, \frac{s}{t} = 21.5 \pm 0.5$$

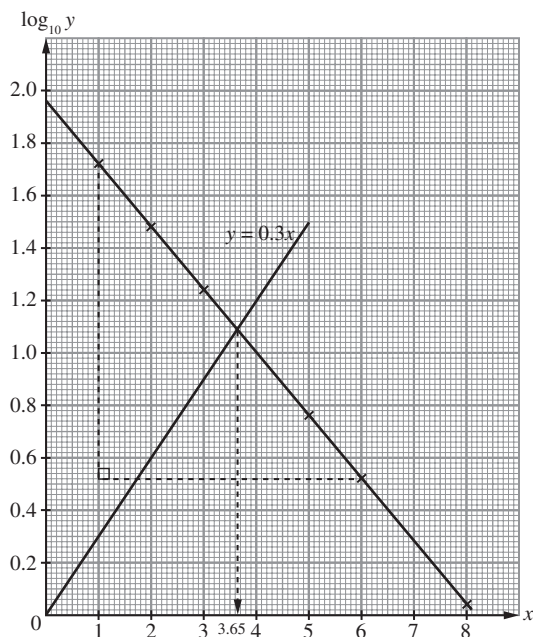
$$\frac{x}{10} = 21.5$$

$$x = 215 (210 - 220)$$

5 (a)

x	1	2	3	5	6	8
$\log_{10} y$	1.72	1.48	1.24	0.76	0.52	0.04

(b)



(c) (i) $y = Ca^{-x}$

$$\log_{10} y = \log_{10} Ca^{-x}$$

$$\log_{10} y = \log_{10} C + \log_{10} a^{-x}$$

$$\log_{10} y = \log_{10} C - x \log_{10} a$$

$$\log_{10} y = (-\log_{10} a)x + \log_{10} C$$

Daripada graf/From the graph,

$$m = \frac{1.72 - 0.52}{1 - 6}$$

$$= -0.24 \pm 0.005$$

$$-\log_{10} a = -0.24$$

$$a = 1.738(1.718 - 1.758)$$

$$C = 1.96 \pm 0.01$$

$$\log_{10} C = 1.96$$

$$C = 91.20(89.13 - 93.33)$$

(ii) $Ca^{-x} = 2^x$

$$y = 2^x$$

$$\log_{10} y = \log_{10} 2^x$$

$$\log_{10} y = x \log_{10} 2$$

$$\log_{10} y = 0.30x$$

$$Y = 0.30X$$

x	0	5
$\log_{10} y$	0	1.50

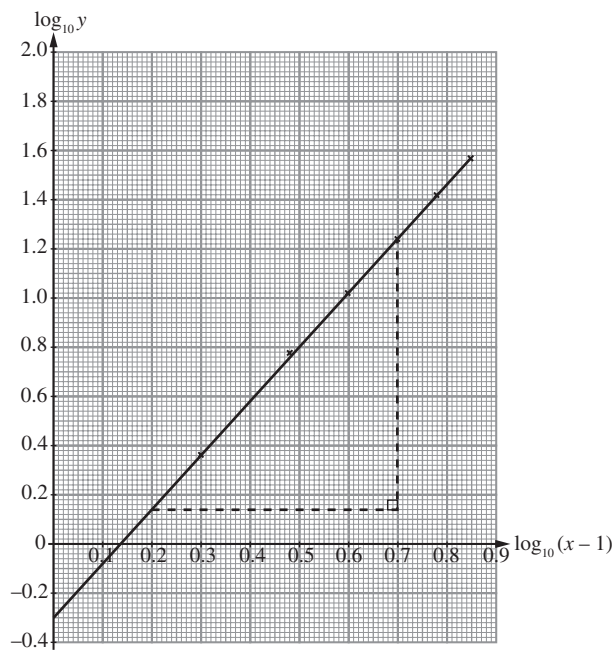
Daripada graf/From the graph,

$$x = 3.65 \pm 0.05$$

6 (a)

$\log_{10}(x-1)$	0.30	0.48	0.60	0.70	0.78	0.85
$\log_{10} y$	0.36	0.76	1.02	1.24	1.42	1.57

(b)



(c) (i) $y = a(x-1)^n$

$$\log_{10} y = \log_{10} a(x-1)^n$$

$$\log_{10} y = \log_{10} a + \log_{10} (x-1)^n$$

$$\log_{10} y = \log_{10} a + n \log_{10} (x-1)$$

$$m = \frac{1.24 - 0.14}{0.7 - 0.2}$$

$$= 2.2 \pm 0.05$$

$$n = 2.2 \pm 0.05$$

(ii) $c = -0.3 \pm 0.02$

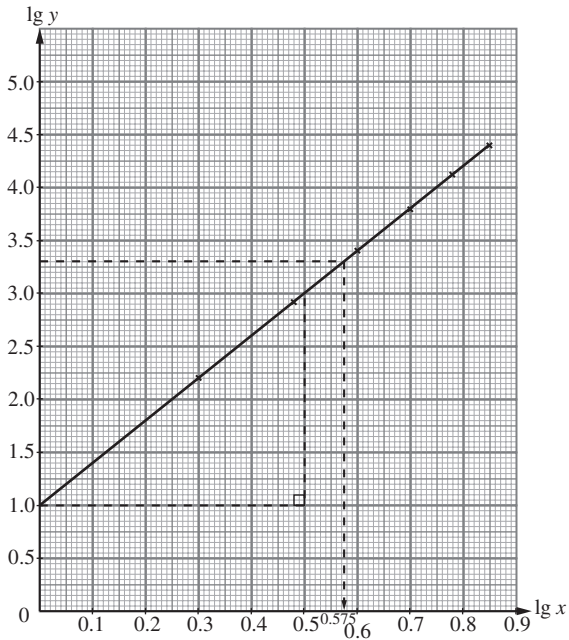
$$\log_{10} a = -0.3$$

$$a = 0.5012(0.4989 - 0.5035)$$

7 (a)

lg x	0.30	0.48	0.60	0.70	0.78	0.85
lg y	2.20	2.92	3.40	3.80	4.12	4.40

(b)



(c) (i) Daripada graf/From the graph,

$$m = \frac{3 - 1}{0.5 - 0} = 4 \pm 0.05$$

$$c = 1 \pm 0.05$$

$$Y = mX + c$$

$$\log_{10} y = 4t \log_{10} x + 1$$

$$\log_{10} y = (3.95 - 4.05) \log_{10} x + (0.95 - 1.05)$$

(ii) $\log_{10} y = \log_{10} x^4 + \log_{10} 10$

$$\log_{10} y = \log_{10} 10x^4$$

$$y = 10x^4$$

$$y = (9.5 - 10.5)x^{3.95 - 4.05}$$

(d) Apabila/When $y = 2\,000$,

$$\log_{10} y = 3.30$$

$$\log_{10} x = 0.575 \pm 0.01$$

$$x = 3.758(3.673 - 3.846)$$

Atau apabila/Or when $y = 2\,000$,

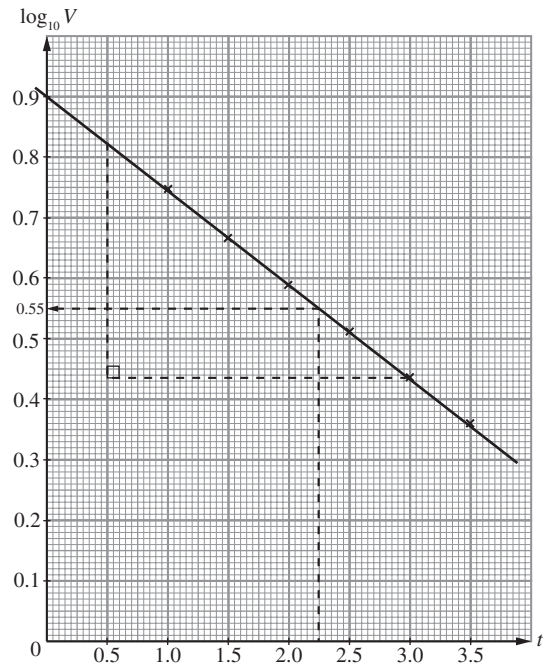
$$2\,000 = 10x^4$$

$$x = 3.761$$

8 (a)

t	1.0	1.5	2.0	2.5	3.0	3.5
log ₁₀ V	0.75	0.67	0.59	0.51	0.44	0.36

(b)



(c) (i) Apabila/When $t = 2.25$,

$$\log_{10} V = 0.55 \pm 0.01$$

$$V = 3.548(3.467 - 3.631)$$

(ii) $V = Ab^t$

$$\log_{10} V = \log_{10} Ab^t$$

$$\log_{10} V = \log_{10} A + \log_{10} b^t$$

$$\log_{10} V = (\log_{10} b)t + \log_{10} A$$

Daripada graf/From the graph,

$$c = 0.9 \pm 0.01$$

$$\log_{10} A = 0.9 \pm 0.01$$

$$A = 7.943(7.762 - 8.128)$$

Isi padu awal/Initial volume = 7.943 m^3

(iii) $m = \frac{0.82 - 0.435}{0.5 - 3}$

$$= -0.154 \pm 0.005$$

$$\log_{10} b = -0.154$$

$$b = 0.7015 (0.6934 - 0.7096)$$

Kadar pengurangan/Rate of reduction,

$$b = (1 - 0.7015) \times 100\%$$

$$= 29.85\% (29.04\% - 30.66\%)$$