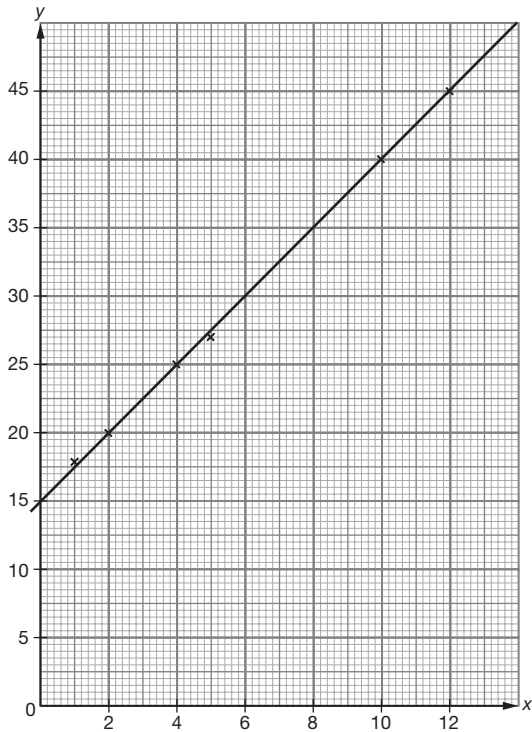


Jawapan

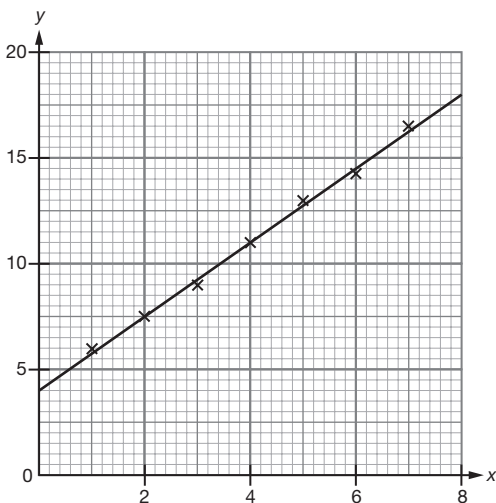
Praktis 6

Praktis Formatif

1

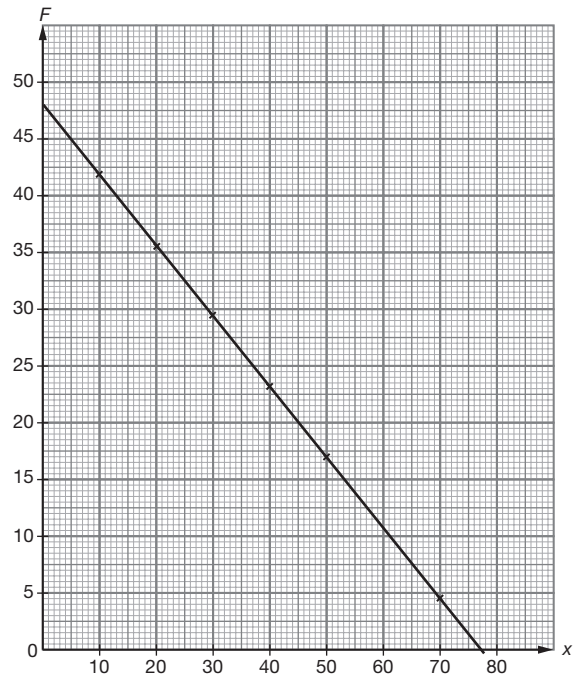


2 (a)



$$\begin{aligned} \text{(b) } m &= \frac{18 - 4}{8 - 0} \\ &= \frac{7}{4} \\ c &= 4 \\ y &= \frac{7}{4}x + 4 \end{aligned}$$

3 (a)



$$\begin{aligned} \text{(b) } m &= \frac{48 - 17}{0 - 50} \\ m &= -0.62 \\ c &= 48 \\ F &= -0.62x + 48 \end{aligned}$$

$$\begin{aligned} \text{4 (a) } m &= -\frac{4}{6} \\ &= -\frac{2}{3} \\ c &= 4 \\ y &= -\frac{2}{3}x + 4 \end{aligned}$$

$$\begin{aligned} \text{(b) (i) } x &= -3, y = -\frac{2}{3}(-3) + 4 \\ y &= 6 \end{aligned}$$

$$\begin{aligned} \text{(ii) } y &= 10, -\frac{2}{3}x + 4 = 10 \\ \frac{2}{3}x &= -6 \\ x &= -9 \end{aligned}$$

$$5 \quad 2y = 6x - x^2$$

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

$$X = x$$

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

$$6 \quad y = \sqrt{\frac{ax^2 + b}{x^2}}$$

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

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

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

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

$$Y = mX + c$$

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

$$7 \quad (a) \quad m = \frac{6-4}{2-6}$$

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

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

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

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

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

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

$$(b) \quad \frac{1}{y} = -\frac{1}{2}x^2 + 7$$

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

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

$$x^2 = 16$$

$$x = \pm 4$$

$$8 \quad (a) \quad pxy = qx + pq$$

$$\div px, y = \frac{q}{x} + \frac{q}{p}$$

$$y = q\left(\frac{1}{x}\right) + \frac{q}{p}$$

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

$$Y = mX + c$$

$$(b) \quad q = -4$$

$$\frac{q}{p} = 8$$

$$\frac{-4}{p} = 8$$

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

$$9 \quad (a) \quad \text{Kaedah/Method 1:}$$

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

$$Y = 3X + 6$$

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

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

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

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

Kaedah/Method 2:

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

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

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

$$Y = mX + c$$

$$a = 6$$

$$b = 3$$

$$(b) \quad y\sqrt{x} = 6\sqrt{x} + \frac{3}{\sqrt{x}}$$

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

$$m = 6$$

$$10 \quad (a) \quad y = 5x^2 - 4x$$

$$\div x^2, \frac{y}{x^2} = -\frac{4}{x} + 5$$

$$\frac{y}{x^2} = -4\left(\frac{1}{x}\right) + 5$$

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

$$Y = mX + c$$

$$(b) \quad k = 5$$

$$\frac{p-5}{4-0} = -$$

$$p-5 = -16$$

$$p = -11$$

atau/or

$$Y = -4X + 5$$

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

$$11 \quad (a) \quad y = \frac{k}{x} - \frac{2}{x^2}$$

$$\times x^2, x^2y = kx - 2$$

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

$$Y = mX + c$$

$$(b) \quad h = -2$$

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

$$k = 1$$

atau/or

$$Y = kX - 2$$

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

$$12 \quad (a) \quad m = \frac{3.3 - 0.3}{4 - 0}$$

$$= \frac{3}{4} \text{ atau/or } 0.75$$

$$c = 0.3$$

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

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

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

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

13 $\ln y = \ln ke^{\sqrt{x}}$
 $\ln y = \ln k + \ln e^{\sqrt{x}}$
 $\ln y = \ln k + \sqrt{x} \ln e$
 $\ln y = \sqrt{x} + \ln k$
 Plot $\ln y$ melawan \sqrt{x} / Plot $\ln y$ against \sqrt{x}

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

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

15 $m = \frac{11 - 2}{3 - 0}$
 $= 3$
 $Y = 3X + 2$

$\log_3 y = 3x + 2$
 $y = 3^{3x+2}$
 $y = 9(27)^x$

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

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

17 $m = \frac{1 - (-5)}{0 - 3}$
 $= -2$

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:

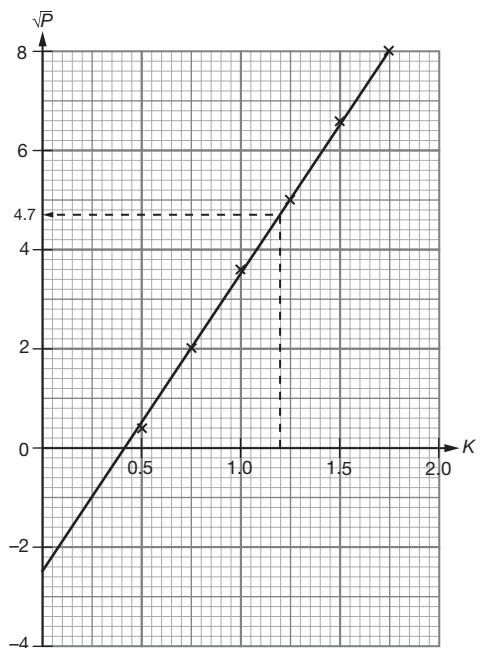
$\log_5 y = \log_5 \frac{A}{p^x}$
 $\log_5 y = \log_5 A - \log_5 p^x$
 $\log_5 y = -x \log_5 p + \log_5 A$
 $\log_5 y = (-\log_5 p)x + \log_5 A$
 $\downarrow \quad \downarrow \quad \downarrow \quad \downarrow$
 $Y = m X + c$

$\log_5 A = 1$
 $A = 5$
 $-\log_5 p = -2$
 $\log_5 p = 2$

$p = 5^2$
 $p = 25$
 $y = \frac{k}{x^n}$
 $\log_{10} y = \log_{10} \frac{k}{x^n}$
 $\log_{10} y = \log_{10} k - \log_{10} x^n$
 $\log_{10} y = -n \log_{10} x + \log_{10} k$
 $\downarrow \quad \downarrow \quad \downarrow \quad \downarrow$
 $Y = m X + c$
 $m = \frac{0.38 - (-0.06)}{-0.3 - 0.48}$
 $= -0.5641$
 $-n = -0.5641$
 $n = 0.5641$
 $c = 0.21$
 $\log_{10} k = 0.21$
 $k = 1.622$

19 (a) $m = \frac{3 - 2}{1 - 6}$
 $= -\frac{1}{5}$
 $Y - 3 = -\frac{1}{5}(X - 1)$
 $Y = -\frac{1}{5}X + \frac{16}{5}$
 $\lg N = -\frac{1}{5}t + \frac{16}{5}$
 $\lg N = 3.2 - 0.2t$
 $N = 10^{3.2 - 0.2t}$
 $N = 10^{3.2} \times (10^{-0.2})^t$
 $N = 1\,585(0.631)^t$
 (b) $N = 1\,585(0.631)^8$
 $N = 39.83$
 $= 40$

20 (a)



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

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

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

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

$$Y = mX + c$$

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

$$= 6$$

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

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

$$c = -2.5,$$

$$\frac{2A}{\frac{1}{3}} = -2.5$$

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

(ii) Daripada graf/From the graph,

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

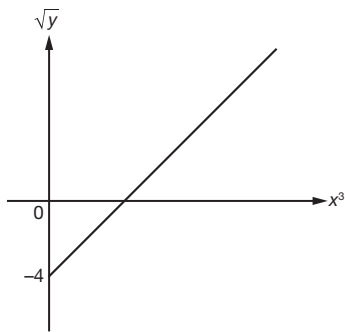
$$P = 22.09$$

Praktis Sumatif

Kertas 1

$$1 (a) y = (5x^3 - 4)^2$$

$$\sqrt{y} = 5x^3 - 4$$



$$(b) y - 1 = \log_{10}\sqrt{x}$$

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

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

2 Kaedah/Method 1:

$$m = \frac{2 - 0}{7 - 4}$$

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

$$Y - 0 = \frac{2}{3}(X - 4)$$

$$Y = \frac{2}{3}X - \frac{8}{3}$$

$$xy = \frac{2}{3}x^2 - \frac{8}{3}$$

$$\div x, y = \frac{2}{3}x - \frac{8}{3x}$$

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

$$ay = x + \frac{b}{x}$$

Dengan perbandingan/By comparison,

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

$$b = -4$$

Kaedah/Method 2:

$$ay = x + \frac{b}{x}$$

$$\times \frac{x}{a} = xy = \frac{1}{a}x^2 + \frac{b}{a}$$

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

$$Y = mX + c$$

$$\frac{1}{a} = \frac{2}{3}$$

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

$$\frac{b}{a} = -\frac{8}{3}$$

$$b = -\frac{8}{3} \times \frac{3}{2}$$

$$= -4$$

$$3 (a) \log_{10} y = \log_{10} k(x + 1)^3$$

$$\log_{10} y = \log_{10} k + \log_{10}(x + 1)^3$$

$$\log_{10} y = 3 \log_{10}(x + 1) + \log_{10} k$$

$$\log_{10} k = -1$$

$$k = 10^{-1}$$

$$k = \frac{1}{10}$$

$$(b) m = \frac{4 - (-2)}{5 - (-3)}$$

$$= \frac{3}{4}$$

$$Y - 4 = \frac{3}{4}(X - 5)$$

$$Y = \frac{3}{4}X - \frac{15}{4} + 4$$

$$= \frac{3}{4}X + \frac{1}{4}$$

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

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

$$y = \left(\frac{3}{4} + \frac{1}{4x}\right)^2 \quad \text{atau/or} \quad y = \left(\frac{3x + 1}{4x}\right)^2$$

$$4 (a) y = \frac{2x}{3x^2 + h}$$

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

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

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

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

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

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

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

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

$$v = 8$$

5 (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 ($3, s$), $s = -\frac{1}{3}(3) - 2$

$$s = -3$$

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

$$t = -9$$

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

$$= 2$$

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

$$Y = 2X - 3$$

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

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

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

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

6 (a) $y = (x + p)^2$

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

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

$$Y = mX + c$$

$$c = -2$$

$$p = -2$$

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

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

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

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

$$Y = mX + c$$

$$c = q$$

$$q = 4$$

(b) (i) $y = px^3$

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

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

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

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

$$Y = mX + c$$

(ii) $\lg p = 2$

$$p = 100$$

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

$$q - 2 = 9$$

$$q = 11$$

atau/or

$$Y = 3X + 2$$

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

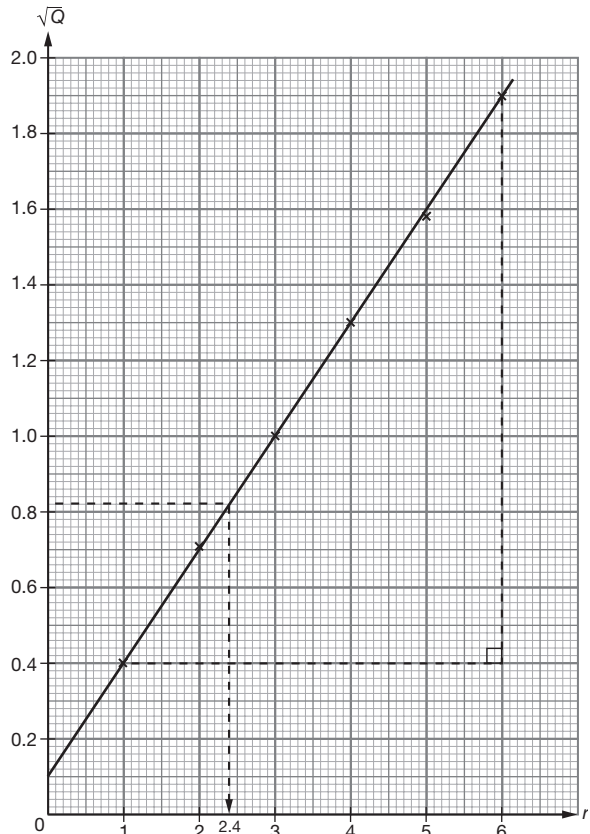
$$q = 11$$

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,

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

$$= 0.3 \pm 0.05$$

$$a = 0.3 \pm 0.05$$

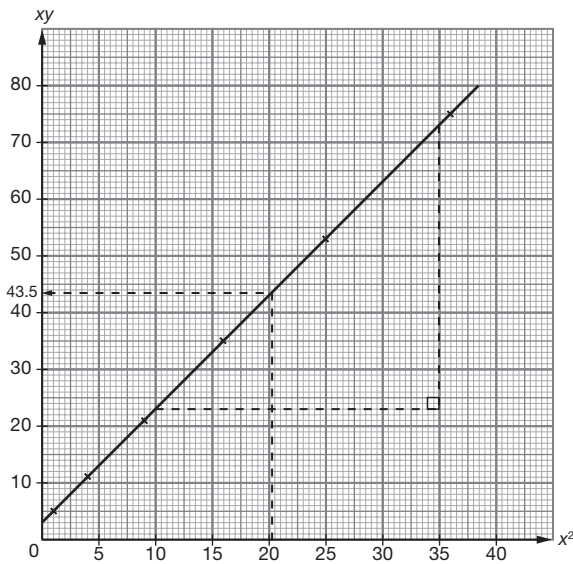
$$c = 0.1 \pm 0.02$$

$$b = 0.1 \pm 0.02$$

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,

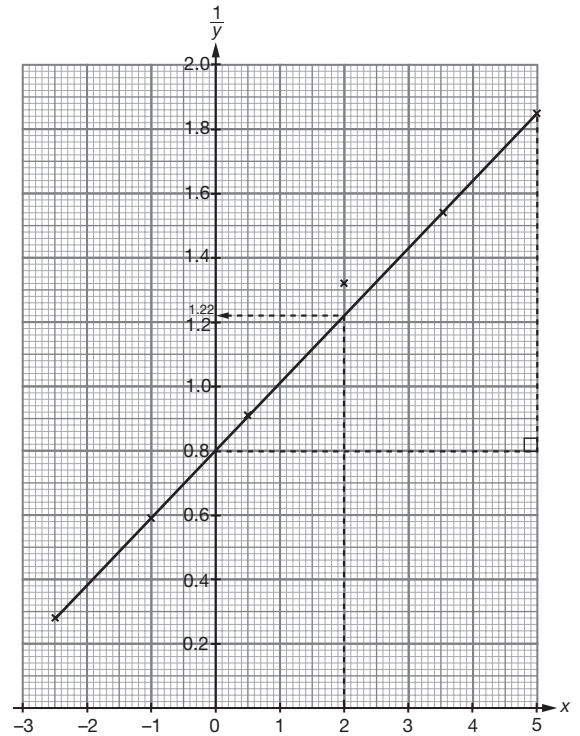
(i) $x = 4.5, x^2 = 20.25$
 $xy = 43.5$
 $4.5y = 43.5$
 $y = 9.667$

(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,

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

$$= 0.21 \pm 0.01$$

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

$$h = 4.762$$

$$c = 0.8 \pm 0.02$$

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

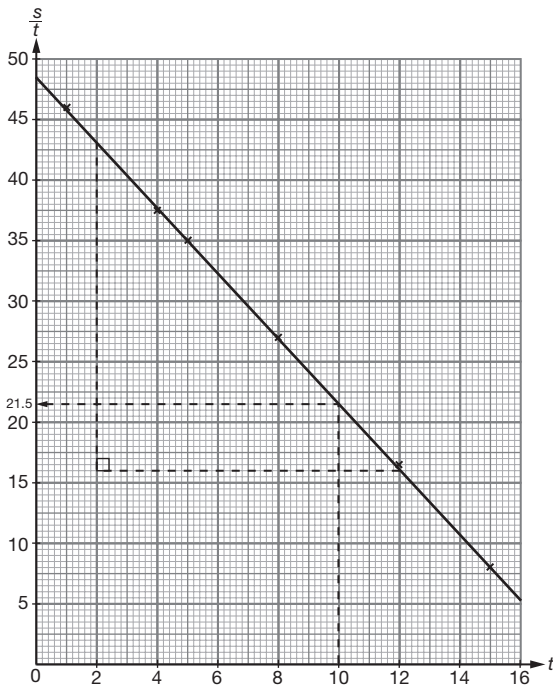
$$k = 0.8 \times 4.762$$

$$k = 3.810$$

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,

$$m = \frac{43 - 16}{2 - 12} = -2.70 \pm 0.1$$

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

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

(ii) $c = 48.5 \pm 1$

$$u = 48.5 \pm 1$$

(iii) $t = 10, \frac{s}{t} = 21.5 \pm 1$

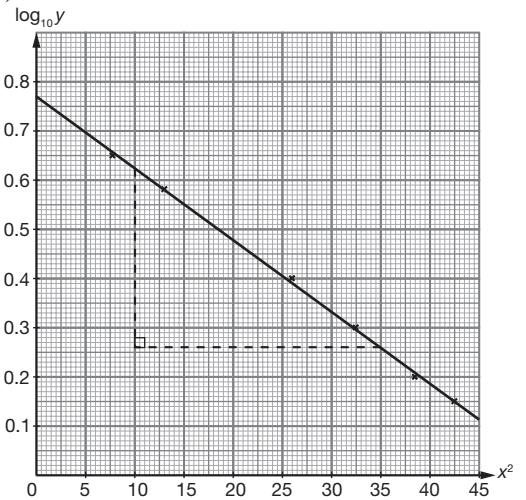
$$\frac{x}{10} = 21.5$$

$$x = 215(214 - 216)$$

5 (a)

x^2	7.84	12.96	26.01	32.49	38.44	42.25
$\log_{10} y$	0.65	0.58	0.40	0.30	0.20	0.15

(b)



(c) (i) $ky = p^{x^2}$

$$\log_{10} ky = \log_{10} p^{x^2}$$

$$\log_{10} y + \log_{10} k = \log_{10} p^{x^2}$$

$$\log_{10} y = (\log_{10} p)x^2 - \log_{10} k$$

Daripada graf/From the graph,

$$m = \frac{0.625 - 0.26}{10 - 35}$$

$$= -0.0146 \pm 0.005$$

$$\log_{10} p = -0.0146$$

$$p = 0.9669(0.9559 - 0.9681)$$

(ii) $c = 0.77 \pm 0.01$

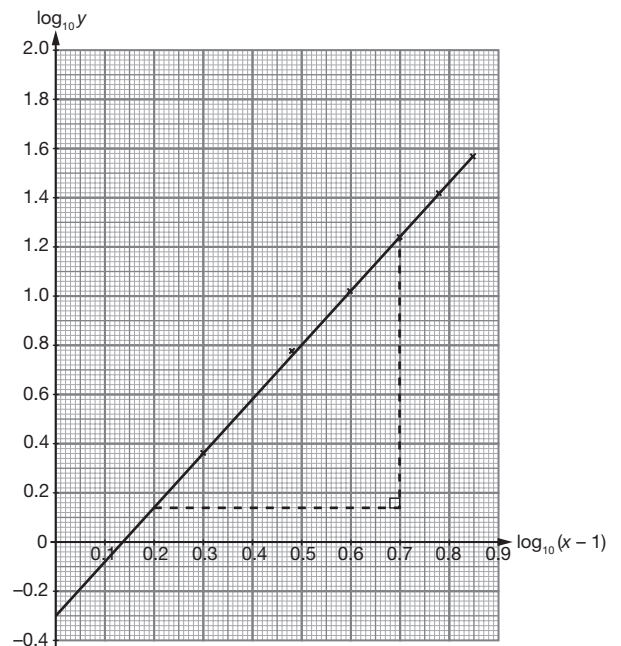
$$-\log_{10} k = 0.77$$

$$k = 0.1698(0.1660 - 0.1738)$$

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)

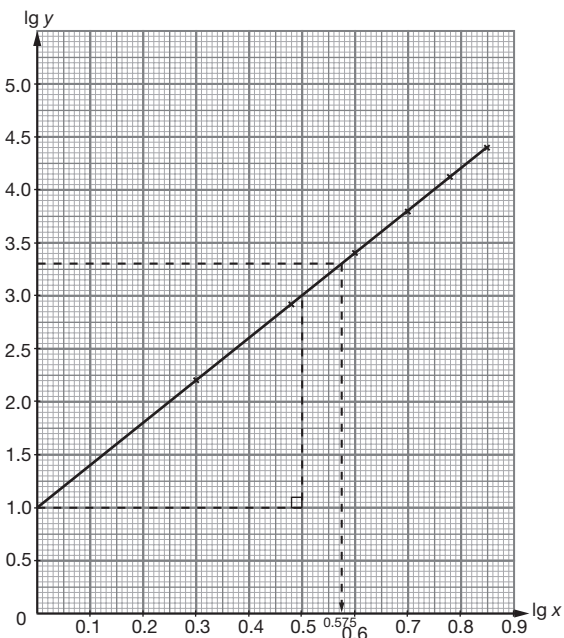


(c) (i) $y = a(x - 1)^n$
 $\log_{10} y = \log_{10} a(x - 1)^n$
 $\log_{10} y = \log_{10} a + \log_{10} (x - 1)^n$
 $\log_{10} y = n \log_{10} (x - 1) + \log_{10} a$
 $m = \frac{1.24 - 0.14}{0.7 - 0.2}$
 $= 2.2 \pm 0.05$
 $n = 2.2 \pm 0.05$
(ii) $c = -0.3 \pm 0.02$
 $\log_{10} a = -0.3$
 $a = 0.5012(0.4989 - 0.5035)$

7 (a)

lg x	0.30	0.48	0.60	0.70	0.78	0.85
lg y	2.2	2.92	3.4	3.8	4.12	4.4

(b)



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

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

$$= 4 \pm 0.05$$

$$c = 1 \pm 0.05$$

$$Y = mX + c$$

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

$$\log_{10} y = (3.99 - 4.01) \log_{10} x + (0.98 - 1.02)$$

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

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

$$y = 10x^4$$

$$y = (9.55 - 10.47)x^{3.99 - 4.01}$$

(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 $y = 2\,000$,

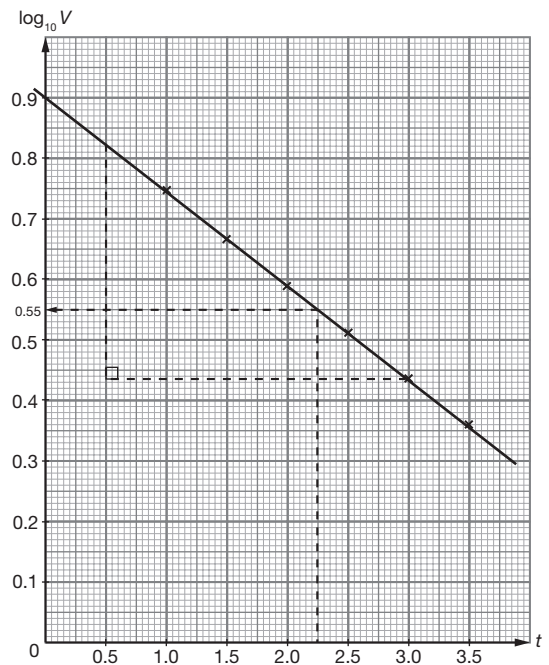
$$2\,000 = 10x^4$$

$$x = 3.761$$

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,

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

$$= -0.154 \pm 0.005$$

$$c = 0.9 \pm 0.01$$

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

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

Isi padu awal/Initial volume = 7.943 m^3

(iii) $\log_{10} b = -0.154$

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

Kadar pengurangan/Rate of reduction,

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

$$= 29.85\%$$