SKEMA PEMARKAHAN SOALAN KERTAS 2 MATEMATIK TAMBAHAN

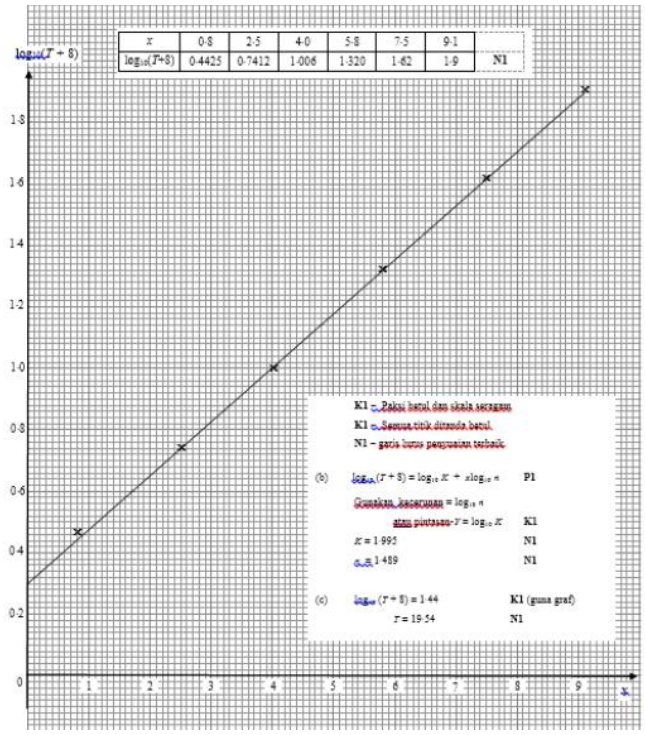
PERCUBAAN 2020

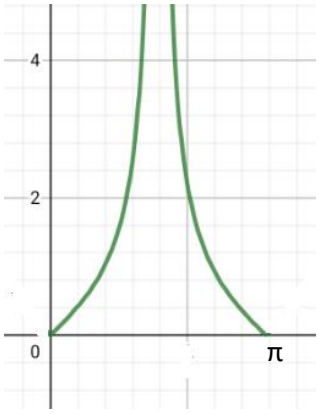
Soalan	Skema pemarkahan	Sub markah	Jumlah Markah
1	$2x + 4y = 24$ $x = 12 - 2y$ $[(12 - 2y) + y]^2 = (12 - 2y)^2 + (3y)^2$ $y(y - 2) = 0 \; or \; (x - 8)(x - 12) = 0$ $y = 0 \, , y = 2$ $x = 12 \, , x = 8$ $area = 48cm^2$	K1 K1 K1 K1 K1 K1 N1	**7**
2	a i) $\frac{100.5 + 150.5}{2}$ $125.5 \; (accept \; without \; working)$ ii) $\frac{75.5(10)+125.5(40)+175.5(10)+225.5(30)+275.5(20)}{110}$ 180.05	K1 N1 K1 N1	**4**
	b) $150.5 \; or \; 50 \; or \; 10$ $150.5 + \left(\frac{\frac{110}{2} - 50}{10}\right)50$ 175.5	P1 K1 N1	**3**

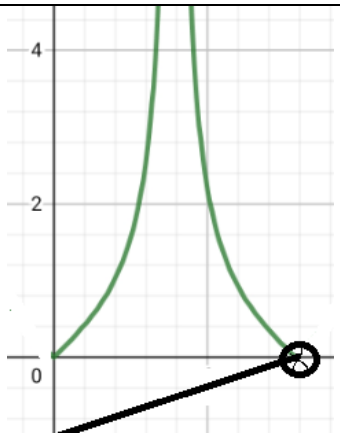
3a) (i)	$\overrightarrow{BD} = \overrightarrow{BA} + \overrightarrow{AD}$ $\overrightarrow{BA} = -20\underline{x}$ $\overrightarrow{AD} = 4 * 8\underline{y} = 32\underline{y}$ $\overrightarrow{BD} = \overrightarrow{BA} + \overrightarrow{AD} = -20\underline{x} + \mathbf{32}\underline{y}$	N1	
ii)	$\overrightarrow{EC} = \overrightarrow{ED} + \overrightarrow{DC}$ $\overrightarrow{ED} = \overrightarrow{3AE} = 24\underline{y}$ $\overrightarrow{EC} = 24\underline{y} + (25\underline{x} - 24\underline{y}) = 25\underline{x}$	N1	**2**
3b)	$\overrightarrow{BD} = -20\underline{x} + 32\underline{y}$ $\overrightarrow{EF} = \frac{3}{5}\overrightarrow{EC} = 15\underline{x}$ $\overrightarrow{FD} = \overrightarrow{FE} + \overrightarrow{ED}$ $= -\overrightarrow{EF} + 24\underline{y}$ $= -15\underline{x} + 24\underline{y}$ $\overrightarrow{FD} = 3(-5\underline{x} + 8\underline{y})$ $\overrightarrow{BD} = 4(-5\underline{x} + 8\underline{y})$ $\overrightarrow{BD} = 4\left(\frac{\overrightarrow{FD}}{3}\right)$ $\overrightarrow{BD} = \frac{4}{3}\overrightarrow{FD}$	K1 K1 K1 N1	**4**

3c)	$\lvert BD \rightarrow \rvert = -20\underset{\sim}{x} + 32\underset{\sim}{y}$ $= \lvert -20(2) + 32(3) \rvert$ $= \sqrt{(40)^2 + (96)^2}$ = **104**	K1 N1	2
4a	$x \log_{10} 3 = y \log_{10} 5$ * $y \log_{10} 5 = z \log_{10} 3 + z \log_{10} 5$ * ***Either** $y \log_{10} 5 = z\left(\frac{y}{x} \log_{10} 5\right) + z \log_{10} 5$ $5^y = 5^{\frac{zy}{x}} \times 5^z$ $z = \frac{xy}{y + x}$	K1 K1 N1	**3**
b)	$\log_{10}\left(2x(4x-1)\right) = 1$ $8x^2 - 2x = 10$ $x = \frac{5}{4}$, $x = 1$	K1 K1 N1	**3**
5a	$Luas = \frac{1}{2} r^2\theta = \frac{1}{2} (8)^2(1.956)$ $= 62.592\ m^2$	K1 N1	**2**
5b	$RC + CQ + RQ$ $RC = 6$ $CQ = r\theta = 8(1.956) = 15.648$ * (* EITHER) $RQ = r\theta = 14(3.142 - 1.956) = 16.604$* $panjang\ , dalam\ \ m\ , pagar\ yang\ diperlukan$ $untuk\ memagar\ batas\ bunga$ $= 6 + 15.648 + 16.604$ $= 38.252\ m$	P1 K1 K1 N1	**4**

6a	$(x-2)^2 = x+4$ $x^2 - 5x = 0$ $x = 0, x = 5$ $k = 5$	K1 N1	**2**
6b	$*\int_0^5 x+4\,dx - *\int_0^5 x^2-4x+4\,dx$ * Either $*\left[\frac{x^2}{2}+4x\right]_0^5 - *\left[\frac{x^3}{3}-2x^2+4x\right]_0^5$ * Either $\left[\left(\frac{(5)^2}{2}+4(5)\right)-(0)\right]$ $-\left[\left(\frac{(5)^3}{3}-2(5)^2+4(5)\right)-(0)\right]$ **= 20.83**	K1 K1 K1 N1	**4**
7.	(i) $P(x \geq 2) = 1 - P(x=1) - P(x=0)$ $= 1 - {}^5C_1\left(\frac{1}{3}\right)^1\left(\frac{2}{3}\right)^4 - {}^5C_0\left(\frac{1}{3}\right)^0\left(\frac{2}{3}\right)^5$ $= \frac{131}{243}$ atau 0.5391 (ii) $\mu = 19$, $\sigma = 3.559$	K1 N1 N1 N1	**10**

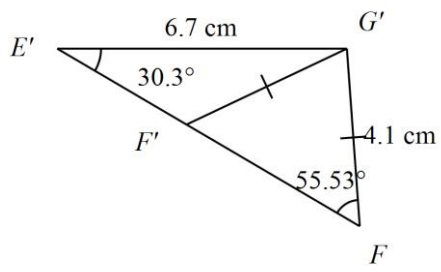
	(b) (i) $P(x > 3.75)$ $= P\left(z > \frac{3.75-3.672}{\sqrt{0.2704}}\right)$ $= P(z > 0.15)$ $= 0.4404$ (ii) $P(3.0 < x < 3.75)$ $= P\left(\frac{3.0-3.672}{\sqrt{0.2704}} < x < \frac{3.75-3.672}{\sqrt{0.2704}}\right)$ $= P(-1.292 < z < 0.15)$ $= 1 - 0.4404 - 0.0981$ $= 0.4615$ $= 46.15\ \%$	K1 N1 K1 K1 N1 N1	
8.	(a) x: 0.8 | 2.5 | 4.0 | 5.8 | 7.5 | 9.1 $\log_{10}(T+8)$: 0.442 0.44 | 0.741 0.74 | 1.006 1.01 | 1.320 1.32 | 1.620 1.62 | 1.900 1.90 Paksi betul dan seragam dan 1 titik ditanda betul Semua titik ditanda betul Garis lurus penyuaian terbaik  	N1 K1 K1 N1	

	(LIHAT LAMPIRAN) (b) $\log_{10}(T+8) = (\log_{10} n)x + \log_{10} K$ $\log_{10} n = gunakan\ kecerunan$ $n = 1.489$ $\log_{10} K = gunakan\ pintasan$ $K = 1.995$ (c) $\log_{10}(T+8) = 1.44$ $T = 19.54$	P1 K1 N1 K1 N1 N1	
9.	$a)\quad \frac{Sin(x-y)+sin(x+y)}{2kosxkosy}$ $=\frac{(sin\ x\ kos\ y - kos\ x\ sin\ y) + (sinx\ cos\ y + cos\ x\ sin\ y}{2kosxkosy}$ $=\frac{2sinxkosy}{2kosxkosy}$ = tan x b)  $\frac{x}{\pi} - y = 1$ $y = \frac{x}{\pi} - 1$	P1 K1 N1 P1 K1 K1 K1 P1	Shape Cycles Amplitude Modulus

	 Equation draw line correctly NOS=1	K1 N1	**10**
10.	$a)\ y = x(8-x)$ $pada\ \ paksi - x, y = 0$ $x(8-x) = 0$ $x = 0, x = 8$ $OA = \frac{8-2k}{2}$ $= 4-k$ $when\ \ x = 4-k,\ y = 8(4-k) - (4-k)^2$ $= 16 - k^2$ $B(4-k, 16-k^2)$ $b)\ Luas\ \ segiempat\ tepat\ \ ABCD = 2k(16-k^2)$ $L = 32k - 2k^3$ $c)\ L = 32k - 2k^3$ $\frac{dL}{dk} = 32 - 6k^2$ $32 - 6k^2 = 0$ $k = 2.3094$ $Luasmaksimum = 32(2.3094) - 2(2.3094)^3$ $= 49.2672\ unit^2$	K1 K1 N1 K1 N1 K1 K1 K1 K1 N1	**10**

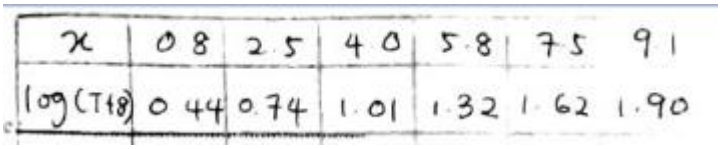
11.	(a) $m = \frac{1}{2}$ $y-(-6)=\frac{1}{2}(x-(-4))$ $y=\frac{1}{2}x-4 \;\; // 2y-x+8=0$ (b) $=\frac{1}{2}\|(24+18)-(18)\|$ $=12$ $\frac{1}{2}\times 3\times 6=9$ $12:9$ OR $4:3$ (c) $2SP=SQ$ or $\sqrt{(x-0)^2+(y-(-6))^2}$ or $\sqrt{(x-(-3))^2+(y-0)^2}$ $2\sqrt{(x-0)^2+(y-(-6))^2}=\sqrt{(x-(-3))^2+(y-0)^2}$ $3x^2+3y^2+48y-6x+135=0$	P1 K1 N1 K1 N1 N1 N1 K1 K1 N1	**10**
12.	*a*) I : $x+y\le 80$ II : $8x+3y\ge 240$ III : $x+2y\le 120$ *Refer to graph* One straight line drawn correctly	N1 N1 N1 K1 N1	**10**

	All straight lines drawn correctly Correct region i) Draw line $x = 2y$ Coconut, $x = 53$; Rambutan, $y = 27$ (ii) $700x + 250y = 7000$ $14x + 5y = 140$ From graph, $\text{Profit}_{min} = 700(10) + 250(55)$ RM20 750.00	N1 K1 N1 K1 N1	
13.	(a) $\text{Item } P: x = \frac{54}{45} \times 100$ $= 120$ $\text{Item } Q: 105 = \frac{21}{y} \times 100$ $105y = 2\,100$ $y = 20$ (b) Composite index in the year 2007 based on the year 2006 $= \frac{4(120) + 3(105) + 1(125) + 2(112)}{4 + 3 + 1 + 2}$ = 114.4 (c) **Item** / **Price index in 2008 based on 2007** P — 110 Q — 70 R — 95 Let the price index of item S in the year 2008 based on the year 2007 be z. $105 = \frac{4(110) + 3(70) + 1(95) + 2z}{4 + 3 + 1 + 2}$	N1 K1 N1 K1 N1 P1 K1 N1 K1	**10**

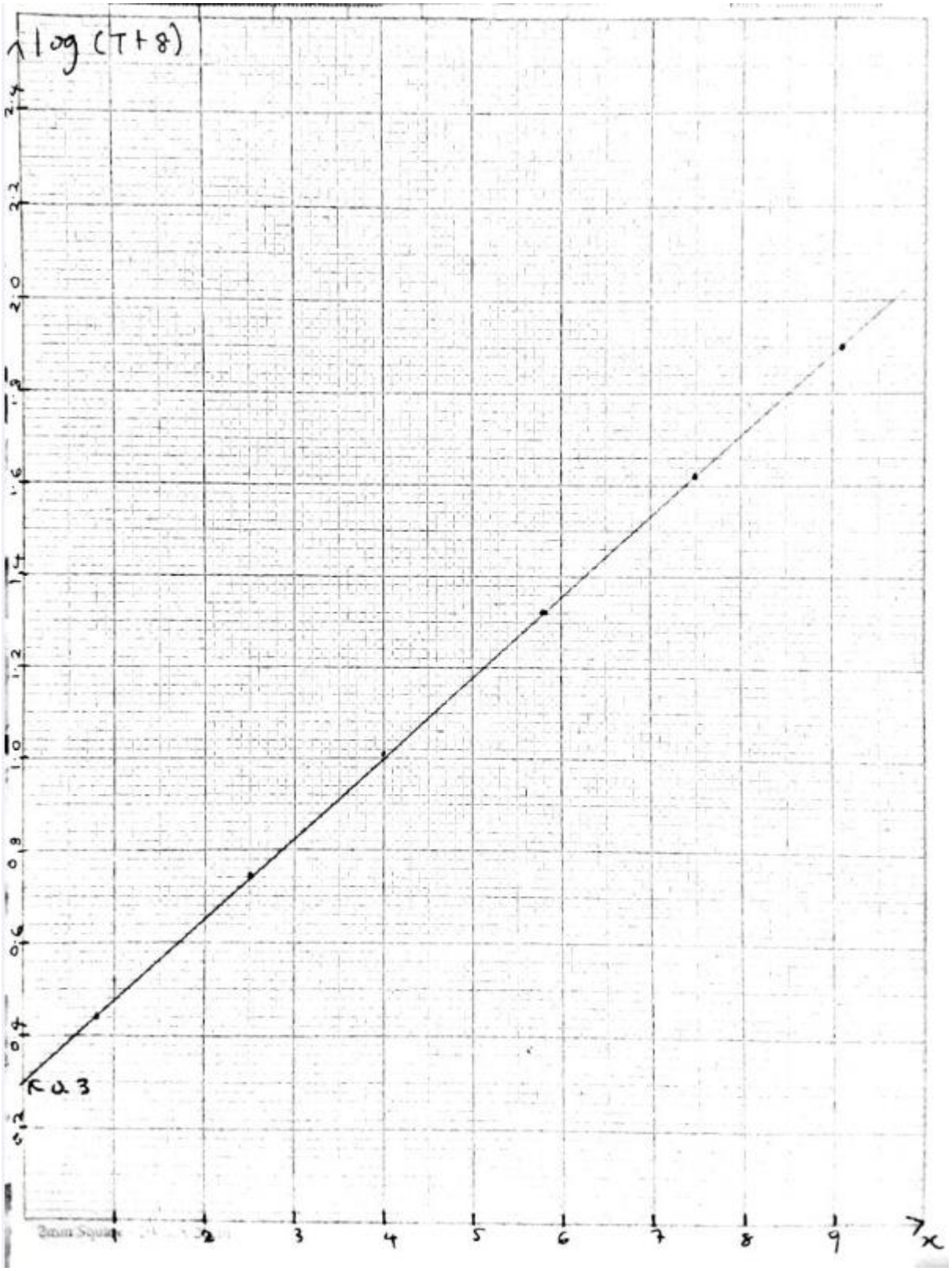
	$1\,050 = 745 + 2z$ $305 = 2z$ $z = 152.5$ Thus, the price of item *S* increases by 52.5% from the year 2007 to the year 2008	 N1	
14.	a) i) = sin $\angle EFG$ = = 0.8245 $\angle EFG = 55.53°$ ii) $6.7^2 = 3.4^2 + 6.4^2 - 2 \times 3.4 \times 6.4 \times \cos \angle EHG$ cos $\angle EHG$ = = 0.1753 $\angle EHG = 79.91°$ iii $\angle EGF = 180° - 30.3° - 55.53°$ $= 94.17°$ Area of ΔEFG $= \times 6.7 \times 4.1 \times \sin 94.17°$ $= 13.7\ cm^2$ Area of ΔEGH $= \times 3.4 \times 6.4 \times \sin 79.91°$ $= 10.71\ cm^2$ Area of quadrilateral *EFGH* $= 13.7 + 10.71$ $= 24.41\ cm^2$ b) (i)  ii $\angle E'F'G' = 180° - 55.53°$ $= 124.47°$	K1 N1 K1 N1 K1 N1 P1 K1 N1 N1	**10**

15	.(a) $v = 15 - 10t$	N1	
	$v = -5\ \text{ms}^{-1}$	N1	
	(b) $15 - 10t = 0$	K1	
	$t = \frac{3}{2}s$	N1	
	(c) $15(4) - 5(4)^2 + h = 0$	K1	
	$h = 20$	N1	
	(d) $s = -5\left(t - \frac{3}{2}\right)^2 + \frac{45}{4}$	K1	**10**
	Tinggi maksimum $= \frac{45}{4} + 20$	K1	
	$= \frac{125}{4}$ m		
	(e) $v = 15 - 10t$	N1	
	$a = -10$	N1	

LAMPIRAN SOALAN NO 8



x	0.8	2.5	4.0	5.8	7.5	9.1
$\log(T+8)$	0.44	0.74	1.01	1.32	1.62	1.90


log (T+8)
2·4
2·2
2·0
1·8
1·6
1·4
1·2
1·0
0·8
0·6
0·4
0·2
Ra 3
2
3
4
5
6
7
8
9
x

Graph for Question 12