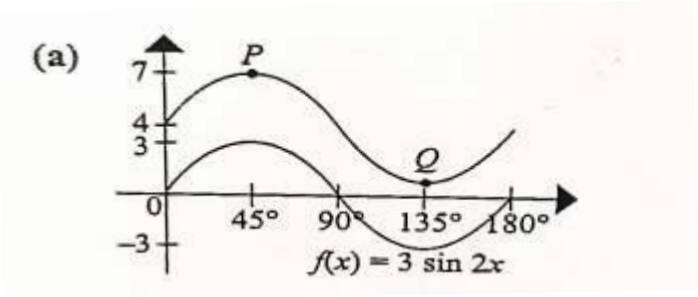
KERTAS MODEL 1
SPM KSSM 2021

MATEMATIK TAMBAHAN **3472/1**
Kertas 1

SKEMA PEMARKAHAN

No. Soalan	Penyelesaian dan skema pemarkahan	Markah	Jumlah Markah
1	a) i) 35 ii) $h: x \rightarrow x^2 - 1$ atau $h(x) = x^2 - 1$ b) $f^2(x) = m^2x + mn + n$ $m = 6$ $n = -3$	1 1 1 1 1	2 3
2	a) $3[(-4) + h]^2 = 75$ $h = 9$ and $h = -1$ b) HTP = $-\frac{3}{5}$ HDP = $-\frac{1}{5}$ $5x^2 + 3x - 1 = 0$ or $x^2 + \frac{3}{5}x - \frac{1}{5} = 0$	1 1 1 1 1	2 3
3	(a)  $p = 3$ $q = 4$ (b) P (45°,7) Q (135° ,1)	1 1 1 1 1	5
4	$S_n = 1404$ $\frac{n}{2}[2(12) + (n-1)16] = 1404$ $8n^2 + 4n - 1404 = 0$ (÷4) $2n^2 + n - 351 = 0$	1 1	

	$(n\text{-}13)(2n+27) = 0$ $n = 13$ atau $n = -\frac{27}{2}$ (ditolak) $n = 13$	1 1 1	5
5	a) $m = \frac{3}{4}$ $c = -2$ $y = \frac{3}{4x^2} - \frac{2}{x}$ b) $y = px - qx^3 \quad \rightarrow \quad \frac{y}{x} = -qx^2 = p$ $m = -\frac{5}{4}$ $q = \frac{5}{4}$ $p = 5$	1 1 1 1 1 1 1	3 3
6	Harga burger = RM x Harga nasi lemak = RM y Harga sepotong kek = RM z $x + y + 2z = 25$ atau $2x + y + z = 20$ atau $x + 2y + z = 19$ $x - y = 1\ atau\ y - z = -6$ *hapuskan z atau *hapuskan x $x = 4\ atau\ y = 3\ atau\ z = 9$ (*salah satu betul) Harga burger ialah RM4, harga nasi lemak ialah RM RM3 dan harga sepotong kek ialah RM9 (*ketiga-tiga nilai betul)	1 1 1 1 1 1	5
7	(a) ${}^{13}C_2 = 78$ (b) bilangan tiga orang saling mengenali bersalaman antara satu sama lain $= {}^{3}C_2$ $= 3$ $78 - 3 = 75$	1,1 1 1 1	2 3
8	a) $9 + r + r = 19$ $r = 5$ $\theta = 1.8$ rad $\theta = 103.12^0$ b) $\pi - 1.8 = 1.342$	1 1 1 1	3

	S = 5(1.342) Perimeter QOR = 5 + 5 + 6.71 = 16.71 cm	1	2
9	(a) $\sqrt{(x-(-2))^2+(y-1)^2}$ @ $\sqrt{(x-4)^2+(y-3)^2}$ $\sqrt{(x-4)^2+(y-3)^2} = 2\sqrt{(x-(-2))^2+(y-1)^2}$ $3x^2 + 3y^2 + 24x - 2y - 5 = 0$ (b) $3x^2 + 3(0)^2 + 24x - 2(0) - 5 = 0$ atau $3x^2 + 24x - 5 = 0$ $b^2 - 4ac = (24)^2 - 4(3)(-5) = 636 > 0$ Pergerakan Ravi menyentuh jalanraya pada dua tempat berbeza	1 1 1 1 1 1	3 3
10	a) $f(x) = \frac{5x^2}{x-3}$ $f'(x) = \frac{(x-3)(10x) - 5x^2(1)}{(x-3)^2}$ $= \frac{5x^2-30x}{(x-3)^2}$ $f'(1) = -\frac{25}{4}$ b) $y = (5x-1)^3$ $\frac{dy}{dx} = 15(5x-1)^2$ $\frac{dy}{dt} = \frac{dy}{dx} \text{X} \frac{dx}{dt}$ $= 15[5(1)-1]^2$ X 4 = 960 unit s^{-1}	1 1 1 1 1	2 3
11	a) $P(M \cap M' \cap M) + P(M' \cap M \cap M)$ $= 2(\frac{5}{9} \text{X} \frac{4}{9} \text{X} \frac{5}{9})$ $= \frac{200}{729}$ b) i) $P(\frac{60-70}{25} < Z < \frac{75-70}{25})$ $P(-0.4 < Z < 0.2)$ = 1 - 0.4207 - 0.3446 = 0.2347	1 1 1 1 1	2

	ii) $P(Z > \frac{100-70}{25})$ $P(Z > 1.2) = 0.1151$ bilangan pekerja = 217	1 1	5
12	a) $\overrightarrow{BC} = \overrightarrow{BA} + \overrightarrow{AC}$ $= 2\underline{a} - 8\underline{b}$ b) $\overrightarrow{DB} = \frac{1}{4}\overrightarrow{AB}$ $= 2\underline{b}$ $\overrightarrow{BE} = \frac{1}{2}\overrightarrow{BC}$ $= \underline{a} - 4\underline{b}$ $AB = 4DB$ $\overrightarrow{DE} = \overrightarrow{DB} + \overrightarrow{BE}$ $= \underline{a} - 2\underline{b}$	1 1 1 1 1	2 3
13	(a) $log_3(3x+4) - 14\left(\frac{log_3 x}{log_3 9}\right) + 6log_3 x = 2$ $log_3(3x+4) - log_3 x = 2$ $log_3 \frac{(3x+4)}{x} = 2$ *atau setara* $\frac{(3x+4)}{x} = 9$ $x = \frac{2}{3}$ (b) $\frac{\sqrt{50} + \sqrt{18} + \sqrt{8}}{3}$ $\frac{5\sqrt{2} + 3\sqrt{2} + 2\sqrt{2}}{3}$ $\frac{10\sqrt{2}}{3}$	1 1 1 1 1 1 1 1	5 3

14	$(a)\ \ m_{AB} = \frac{1}{2}$ m_{AD} = -2 y = -2x + 8 *atau setara* (b) 7x - 2(-2x + 8) = 39 *atau setara* (5,-2) (c) $30 = \frac{1}{2}\|[1(8) + 5(y) + x(-2) + 5(6)] - [6(5) + 8(x) + y(5) + (-2)(1)]\|$ a*tau setara* 7(7) - 2y = 39 (7,5)	1 1 1 1 1 1 1 1 1	3 2 3
15	(a) $h(0) = -(0)^2 + 4(0) + 1.5$ = 1.5 (b) x = 2 $h(2) = -(2)^2 + 4(2) + 1.5$ = 5.5 (c) $-x^2 + 4x + 1.5 = 0$ $x = \frac{-4 \pm \sqrt{(4)^2 - 4(-1)(1.5)}}{2(-1)}$ or equivalent = 4.35	1 1 1 1 1 1 1 1 1	8