3472/1
MATEMATIK TAMBAHAN
Kertas 1
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2 jam

PEPERIKSAAN PERCUBAAN SPM 2021

MATEMATIK TAMBAHAN

PERATURAN PEMARKAHAN

Kertas 1

No	Solution	Sub	Total
1(a)	$6(10) = -5m$	1	
	-12	1	
(b)	$v - u = \frac{1}{2}u^2 + \frac{21}{2}$	1	4
	$m = \frac{1}{2}$, Y-intercept = $\frac{21}{2}$	1	
2(a)	$1 = log_2\left(\frac{x+5}{x}\right)$	1	
	$x = 5$	1	5
2(b)	$log_5\left(\frac{6.4}{2 \times 5}\right)$	1	
	$2log_5 8 - log_5 5 - log_5$	1	
	$2n - m - 1$	1	
3(a)	$L = 2\pi j^2 + \frac{108\pi}{j^2}$	1	
	$\frac{dL}{dj} = 0$	1	
	$j = 3\ cm$	1	5
3(b)	$t = \frac{54}{3^2}$	1	
	$t = 6$	1	
4(a)	$h^{-1}g^{-1}(x)$	1	
4(b)	$g\left(\frac{km+1}{2}\right) = 2$	1	4
	$3\left(\frac{km+1}{2}\right) - 10 = 2$	1	
	$k = \frac{7}{m}$	1	
5(a)	$11\ m$	1	
5(b)	$h = -2\left[(t-2)^2 - 2^2 - \frac{5}{2}\right]$	1	
	$h = 13\ m$	1	6
5(c)	$t = 2\ s$	1	

5(d)	$(t-1)(t-3) \leq 0$	1	
	$t = 2s$	1	
6(a)	$4x^2 + 4x - 3 \geq 0$ $(2x+3)(2x-1) \geq 0$	1	5
	$x \leq -\frac{3}{2}, x \geq \frac{1}{2}$	1	
6(b)	HTP/SOR $= \frac{a^3+1}{a}$ OR HDP/POR$= \frac{1}{a}$	1	
	$x^2 - \left(\frac{a^3+1}{a}\right)x + \frac{1}{a} = 0$	1	
	$a^2x^2 - (a^3+1)x + a = 0$	1	
7(a)	$\frac{(x-1)(2x) - x^2}{(x-1)^2}$		6
	$\frac{x^2 - 2x}{(x-1)^2}$	1	
	$4\left[\frac{x^2}{x-1}\right]_0^2$	1	
	16	1	
7(b)	$\frac{dy}{dx} = 6x^2 + 5x$	1	
	Gantian nilai $x = -1$, $y = -2$ untuk mencari nilai c	1	
	$y = 2x^3 + \frac{5}{2}x^2 - \frac{5}{2}$	1	
8(a)	${}^mC_2 = 36$ or $\frac{m!}{(m-2)!2!} = 36$	1	8
	$\frac{m\times(m-1)}{2} = 36$ or $m^2 - m - 72 = 0$	1	
	$m = 9$	1	
8(b)	i) $\frac{(8-1)!}{2}$ *or* $\frac{7!}{2}$ or $\frac{{}^8P_8}{2(8)}$	1	
	2520	1	
	ii) $\frac{{}^8P_6}{2(6)}$ *or* $\frac{{}^8P_7}{2(7)}$ *or* $\frac{{}^8P_8}{2(8)}$	1	
	$\frac{{}^8P_6}{2(6)} + \frac{{}^8P_7}{2(7)} + \frac{{}^8P_8}{2(8)}$	1	

	7080	1	
9(a)	p = 0.75	1	6
	$^{10}C_9$ x 0.75^9 x 0.25^1 atau $^{10}C_{10}$ x 0.75^{10} x 0.25^0	1	
	1 - $^{10}C_9$ x 0.75^9 x 0.25^1 - $^{10}C_{10}$ x 0.75^{10} x 0.25^0	1	
	0.7560	1	
9(b)	$6q = 2.4$	1	
	$p = 0.6$	1	
10(a)	(a) $4^x \times (4^2)^{x-2} = 4^3$	1	6
	$x + 2(x-2) = 3$	1	
	$x = \frac{7}{3}$	1	
10(b)	$-2 + 20\sqrt{3} = \frac{1}{2}(x)\left(8 - 2\sqrt{3}\right)$	1	
	$x = \frac{-4 + 40\sqrt{3}}{8 - 2\sqrt{3}} \times \frac{8 + 2\sqrt{3}}{8 + 2\sqrt{3}}$	1	
	$panjang\ sisi = 4 + 6\sqrt{3}$	1	
11(a)	i) $\frac{1}{3}$	1	5
	$ii)\ 0 \le f(x) \le 14$	1	
11(b)	f($2x - 4$) = $3x$ + 1 or y = $2x - 4$, x = $\frac{y+4}{2}$	1	
	f(y) =3 $(\frac{y+4}{2}) + 1$	1	
	f(x) = $\frac{3x+14}{2}$	1	
12	a) $sek\ B = \frac{1}{kos\ B}$ $= -\frac{1}{\sqrt{1-q^2}}$	1	4
	b) Use $kos\frac{2B}{2} = 2\ kos^2\frac{B}{2} - 1$	1	

	$-\sqrt{1-q^2} = 2\,kos^2\frac{B}{2} - 1$	1	
	$kos^2\frac{B}{2} = \frac{1-\sqrt{1-q^2}}{2}$	1	
13(a)	$\left(\frac{5(2)+r(3)}{5}, \frac{6(2)+1(3)}{5}\right) = (\,8, s\,)$	1	8
	$\frac{10+3r}{5} = 8\ and\ \frac{12+3}{5} = s$	1	
	$r = 10\,, s = 3$	1+1	
13(b)	i) $t = 3$	1	
	ii) $m_2 = \frac{5}{3}$	1	
	$(y-6) = \frac{5}{3}(x-0)$ atau setara / equivalent	1	
	$3y = 5x + 18$	1	
14(a)	$r^2 = 14^2 + 5^2 - 2(14)(5)\cos 45°$	1	8
	$r = 11.05\ cm$	1	
14(b)	$\frac{\sin AOB}{14} = \frac{\sin 45°}{11.05}$ atau kaedah lain	1	
	$BOD = 63.62°\ \ or\ 1.111\ rad$	1	
14(c)	Luas sektor $ACD = \frac{1}{2}(17)^2\left(\frac{\pi}{4}\right)$	1	
	Luas $\Delta AOB = \frac{1}{2}(14)(5)\sin 45°$ or Luas sektor $BOE = \frac{1}{2}(11.05)^2(1.111)$	1	
	Luas kawasan berlorek $= \frac{1}{2}(17)^2\left(\frac{\pi}{4}\right) - \frac{1}{2}(14)(5)\sin 45° - \frac{1}{2}(11.05)^2(1.111)$	1	
	Luas kawasan berlorek $= 20.93 cm^2$	1	
15(a)	$a\ =\ 18\,000$ $r\ =\ 1.05$	1	8

	$S_5 = \frac{18000(1.05^5 - 1)}{1.05 - 1}$ $S_5 = RM\ 99\ 461$	1	
	$Simpanan = 25\% \times 99\ 461$ $= RM\ 24\ 865$	1	
15(b)	$x^2 - 5 - 25 = 25 - 3x - 1$	1	
	$(x - 6)(x + 9) = 0$ $x = 6, x = -9$	1	
	$Gantikan\ x = 6\ maka\ sebutan\ 19, 25, 31\ (d = 6)$ $Gantikan\ x = -9\ maka\ sebutan\ -26, 25, 76\ (d = 51)$	1	
	$maka\ x = -9$	1	
	$T_{10} = a + 9(51) = 76$ $a = -383$	1	