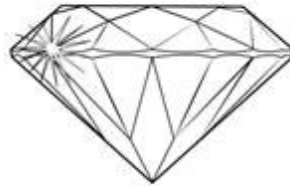




KEMENTERIAN PENDIDIKAN
JABATAN PENDIDIKAN NEGERI PERAK



MODUL BLUE DIAMOND *Matematik Tambahan*

TINGKATAN 5

Bab 3

PENGAMIRAN *(Integration)*

SKEMA JAWAPAN

JABATAN PENDIDIKAN NEGERI PERAK
We Deliver

SKEMA JAWAPAN KERTAS 1

NO.	BUTIRAN	PECAHAN MARKAH	JUMLAH
1(a)	$\frac{dy}{dx} = \frac{[(3x^2 + 4)(2)] - [2x(6x)]}{(3x^2 + 4)^2}$ $= \frac{8 - 6x^2}{(3x^2 + 4)^2}$	1 1	4
1(b)	$\int \frac{4 - 3x^2}{(3x^2 + 4)^2} dx = \frac{1}{2} \left(\frac{2x}{3x^2 + 4} \right)$ $= \frac{x}{3x^2 + 4}$	1 1	

Sumber : Ticket To Victory 1 | Kertas 1 | Set 1 | Soalan 2

NO.	BUTIRAN	PECAHAN MARKAH	JUMLAH
2	(a) $\frac{dy}{dx} = 2x$ Apabila $x = 2$, $\frac{dy}{dx} = 4$ $\delta y = \frac{dy}{dx} \times \delta x$ $= 4 (0.01)$ $= 0.04 \text{ unit}$ nilai hampir = $4 + 0.04$ $= 4.04$	1 1 1 1	4
	(b) Isipadu piramid $V = 400x^3$ $\frac{dV}{dx} = 1200x^2$ $\delta V = \frac{dV}{dx} \times \delta x$ $= 1200 (1.5)^2 \times 0.005$ $= 13.5 \text{ cm}^3$	1 1 1	3

Sumber : Ticket To Victory 1 | Kertas 1 | Set 2 | Soalan 12

NO.	BUTIRAN	PECAHAN MARKAH	JUMLAH
3(a)	$\frac{(1+2x)^5}{5(2)} + c$ $\frac{1}{10}(1+2x)^5 + c$ $k = \frac{1}{10}$ $n = 5$	1 1 1 1	

3(b)	$y = \int x^3 + 3x^2 \, dx$	1	8
	$y = \frac{x^4}{4} + \frac{3x^3}{3} + c$	1	
	$14 = \frac{(2)^4}{4} + (2)^3 + c \quad \text{atau} \quad c = 2$	1	
	$y = \frac{x^4}{4} + x^3 + 2$	1	

Sumber : Ticket To Victory 1 | Kertas 1 | Set 3 | Soalan 14

NO.	BUTIRAN	PECAHAN MARKAH	JUMLAH
4(a)(i)	$(1, -\frac{5}{6})$ dan $(-\frac{1}{2}, \frac{7}{24})$	1 , 1	8
(ii)	$f''(1) = 3$, titik minimum	1	
	$f''(-\frac{1}{2}) = -3$, titik maksimum	1	
(b)(i)	$\frac{11}{2}$	1	
(ii)	$\frac{55}{4}$ atau $[\frac{k^2}{2}]_1^2$	1	8
	$\frac{55}{4} - [\frac{k^2}{2}]_1^2 = 10$	1	
	$\frac{5}{2}$	1	

Sumber : Ticket To Victory 2 | Kertas 1 | Set 1 | Soalan 14

NO.	BUTIRAN	PECAHAN MARKAH	JUMLAH
5 (a)	$\int 24(4x - 3)^5 \, dx = (4x - 3)^6 \times \frac{1}{8}$	1	
	$\int 3(4x - 3)^5 \, dx = \frac{1}{8}(4x - 3)^6 + c$	1	

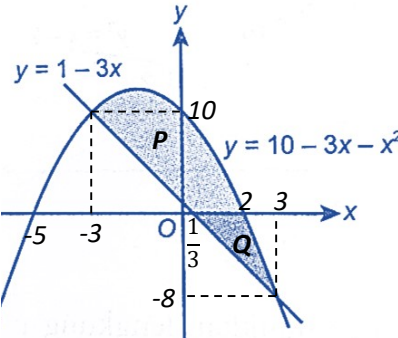
(b)	$\left[\frac{x^2}{2(x+3)} \right]$ $\frac{2^2}{2(2+3)} - \frac{1^2}{2(1+3)}$ $\frac{11}{40}$	1 1 1	5
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Sumber : Modul Gempur | Kertas 1 | Set 1 | Soalan 5

NO.	BUTIRAN	PECAHAN MARKAH	JUMLAH
6(a)	$2y = 6 - (y^2 + 3)$ $y = 1, y = -2$ (abaikan) $(4, 1)$	1 1 1	3
(b)	$\frac{y^3}{3} + 3y$ $\frac{1}{2} \times 2 \times 4$ atau Guna $\int_0^1$ dalam $\frac{y^3}{3} + 3y$ $\frac{1}{2} \times 2 \times 4 + \int_0^1 y^2 + 3 dy$ $\frac{22}{3} // 7\frac{1}{3}$	1 1 1 1	4
(c)	$\pi \int_3^4 (x-3) dx$ $\pi \left[\frac{(4)^2}{2} - 3(4) \right] - \left[\frac{(3)^2}{2} - 3(3) \right]$ $\frac{1}{2} \pi$	1 1 1	3

NO.	BUTIRAN	PECAHAN MARKAH	JUMLAH
7 (a)	$(8-2k)(5k)$ Berjaya Buktikan, Luas Q = $-10k^2 + 40k$ $k = 2$	1 1 1	5
(b)	$(8)^3 - (4)^3$ 408	1 1	

SKEMA JAWAPAN KERTAS 2

NO.	BUTIRAN	PECAHAN MARKAH	JUMLAH
1(a)	$\frac{dV}{dh} = 5 + h^2$ $3 = (5 + (4)^2) \times \frac{dh}{dt}$ $\frac{dh}{dt} = \frac{1}{7} \text{ cm s}^{-1}$	1 1 1	10
(b)(i)	$\left(\frac{1}{3}, 0\right)$ or $(2, 0)$ or $(2, 5)$ Solve $10 - 3x - x^2 = 1 - 3x$ $(3, -8)$ and $(-3, 10)$ $\int 10 - 3x - x^2 dx$ Use $\int_{-3}^2$ or $\int_2^3$ into $\left[10x - \frac{3x^2}{2} - \frac{x^3}{3}\right]$ $\frac{1}{2}\left(3 + \frac{1}{3}\right)(10)$ or $\frac{1}{2}\left(3 - \frac{1}{3}\right)(8)$	 1 1 1 1	
	$\int_{-3}^2 10 - 3x - x^2 dx - \frac{1}{2}\left(3 + \frac{1}{3}\right)(10) +$ $\frac{1}{2}\left(3 - \frac{1}{3}\right)(8) - \left \int_2^3 10 - 3x - x^2 dx\right $ 36 unit^2	1 1	

Sumber : Ticket To Victory 1 | Kertas 2 | Set 1 | Soalan 9

NO.	BUTIRAN	PECAHAN MARKAH	JUMLAH
2(a)	$\frac{dy}{dx} = 4x - 4$ $m_{\text{norm}} = -\frac{1}{4(2) - 4}$ $y - (-3) = -\frac{1}{4}(x - 2)$ $x + 4y + 10 = 0$	1 1 1 1	10

(b)(i)	$5 - x = \frac{4}{x}$ dan selesaikan	1	
	$A(1,4)$ dan $B(4,1)$	1	
	$\int (5-x)^2 dx$ ATAU $\int \left(\frac{4}{x}\right)^2 dx$	1	
		1	
	Guna $\pi \int_1^4$ dalam $\left[25x - \frac{10x^2}{2} + \frac{x^3}{3} \right]$ ATAU $\left[-\frac{16}{x} \right]$	1	
	$\pi \int_1^4 (5-x)^2 dx - \pi \int_1^4 \left(\frac{4}{x}\right)^2 dx$	1	
	9π		

Sumber : Ticket To Victory 1 | Kertas 2 | Set 2 | Soalan 9

NO.	BUTIRAN	PECAHAN MARKAH	JUMLAH
3(a)	$-12.5 = p + q(2)^2$ $\left[px + \frac{qx^3}{3} \right]_0^2 = -9$ Selesaikan $-12.5 = p + 4q$ dan $2p + \frac{8}{3}q = -9$ $p = -0.5$ dan $q = -3$	1 1 1 1	10
(b)(i)	Ganti $x = 2$ dalam $\frac{d}{dx} \left(-\frac{1}{2} - 3x^2 \right)$ $-6(2)$ $y - (-12.5) = -12(x - 2)$ atau $y = -12x + c$ dan ganti $(2, -12.5)$ $y = -12x + \frac{23}{2}$	1 1 1	
(c)	$\pi \int \frac{-1-2y}{6} dy$ Gantikan had $y = -2$ dan $y = -0.5$ ke dalam $\left[\frac{-y - y^2}{6} \right]$ $\frac{3}{8}\pi$	1 1 1	

Sumber : Ticket To Victory 1 | Kertas 2 | Set 3 | Soalan 9

NO.	BUTIRAN	PECAHAN MARKAH	JUMLAH
4(a)	$y^2 = 2x + 4$ $y^2 = 2(0) + 4$ $y = \pm 2$ $R(0,2)$	1 1	8
(b)	Luas berlerek = $\int_0^6 (2x + 4)^{\frac{1}{2}} - (x - 2) dx$ $= \left[\frac{(2x+4)^{\frac{3}{2}}}{2(\frac{3}{2})} - \frac{x^2}{2} + 2x \right]_0^6$ $= \left[\frac{(2(6)+4)^{\frac{3}{2}}}{2(\frac{3}{2})} - \frac{(6)^2}{2} + 2(6) \right] - [0]$ $= 12\frac{2}{3} // 12.67 \text{ unit}^2$	1 1 1	
(c)	Isipadu = $\pi \int_{-2}^0 (2x + 4) dx$ $= \pi \left[\frac{2x^2}{2} + 4x \right]_{-2}^0$ $= \pi \left[0 - \left[(-2)^2 + 4(-2) \right] \right]$ $= 4\pi \text{ unit}^3$	1 1 1	

Sumber : Ticket To Victory 2 | Kertas 2 | Set 1 | Soalan 7

NO.	BUTIRAN	PECAHAN MARKAH	JUMLAH
5 (a)	Selesaikan $x^2 - 3x = x$ K (4,4) $\int_0^4 x \, dx$ atau $L_1 = \frac{1}{2}(4)(4)$ $\frac{x^3}{3} - \frac{3x^2}{2}$ $\left[\frac{x^3}{3} - \frac{3x^2}{2}\right]_3^4$ atau $\left[\frac{x^3}{3} - \frac{3x^2}{2}\right]_0^3$ $(L_2 - L_1) + L_3$ $\frac{32}{3} \text{ unit}^2$	1 1 1 1 1 1	10
(b)	$V = \frac{\pi}{2} \left[\frac{x^5}{5} - \frac{6x^4}{4} - 3x^3 \right]_0^3$ $V = \frac{\pi}{2} \left[\left[\frac{(3)^5}{5} - \frac{6(3)^4}{4} - 3(3)^3 \right] - [0] \right]$ $V = \frac{81}{20} \pi$	1 1 1	

Sumber : Ticket To Victory 2 | Kertas 2 | Set 2 | Soalan 8

NO.	BUTIRAN	PECAHAN MARKAH	JUMLAH
6(a)	$2y = 6 - (y^2 + 3)$ $y = 1, y = -2$ (abaikan) (4,1)	1 1 1	3
(b)	$\frac{y^3}{3} + 3y$ $\frac{1}{2} \times 2 \times 4$ atau Guna $\int_0^1$ dalam $\frac{y^3}{3} + 3y$ $\frac{1}{2} \times 2 \times 4 + \int_0^1 y^2 + 3 \, dy$ $\frac{22}{3} // 7\frac{1}{3}$	1 1 1 1	4
(c)	$\pi \int_3^4 (x-3) \, dx$ $\pi \left[\frac{(4)^2}{2} - 3(4) \right] - \left[\frac{(3)^2}{2} - 3(3) \right]$ $\frac{1}{2} \pi$	1 1 1	3

Sumber : Modul Gempur | Kertas 2 | Set 1 | Soalan 8

NO.	BUTIRAN	PECAHAN MARKAH	JUMLAH
7(a)	$2(x^2 + 2) + x - 7 = 0$ $x = 1, x = -\frac{3}{2}$ (<i>abaikan</i>) $(1, 3)$	1 1 1	3
(b)	3 atau $\int_0^1 x^2 + 2 \, dx$ $3 - \left[\frac{x^3}{3} + 2x \right]_0^1$ $3 - \left[\frac{1^3}{3} + 2(1) - \frac{0^3}{3} - 2(0) \right]$ $\frac{2}{3} \text{ unit}^2$	1 1 1 1	4

Sumber : Modul Gempur | Kertas 2 | Set 2 | Soalan 8