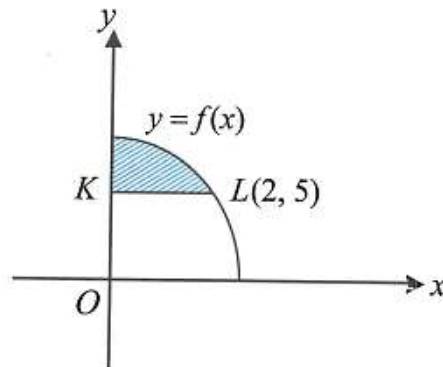


PENGAMIRAN**SELANGOR SET 3**KERTAS 1

- 11 Rajah 4 menunjukkan sebahagian daripada lengkung $y = f(x)$, yang melalui $L(2, 5)$. Garis lurus KL adalah selari dengan paksi- x .

Diagram 4 shows part of the curve $y = f(x)$, which passes through $L(2, 5)$. The straight line KL is parallel to the x -axis.



Rajah 4
Diagram 4

Lengkung itu mempunyai fungsi kecerunan $-2x$.

The curves has a gradient function of $-2x$.

Cari

Find

- (a) persamaan lengkung itu,
the equation of the curve,

[3 markah]

[3 marks]

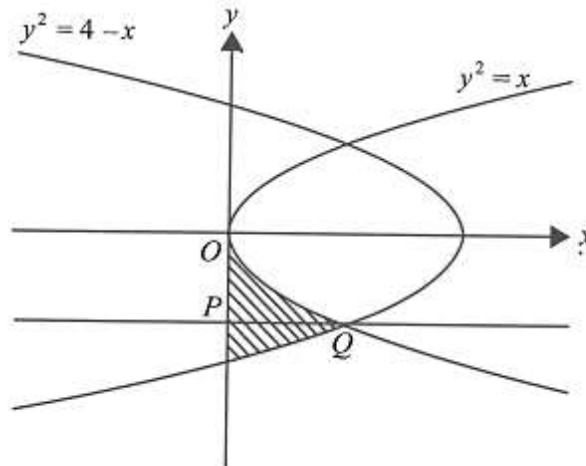
- (b) luas rantau berlorek.
the area of the shaded region.

[3 markah]

KERTAS 2

- 6 Rajah 4 menunjukkan dua lengkung $y^2 = x$ dan $y^2 = 4 - x$ bersilang pada titik Q .
Garis lurus PQ selari dengan paksi- x .

*Diagram 4 shows two curves $y^2 = x$ and $y^2 = 4 - x$ are intersecting at point Q .
The straight line PQ is parallel to the x -axis.*



Rajah 4
Diagram 4

Cari
Find

- (a) persamaan garis lurus PQ ,
the equation of the straight line PQ ,
- [2 markah]
[2 marks]
- (b) luas, dalam unit², bagi rantau berlorek,
area, in unit², of the shaded region,
- [3 markah]
[3 marks]
- (c) isi padu yang dijanakan apabila rantau yang dibatasi oleh lengkung $y^2 = x$ dan lengkung $y^2 = 4 - x$ dikisarkan melalui 180° pada paksi- x .
the volume generated when the region bounded by the curves $y^2 = x$ and $y^2 = 4 - x$ is revolved 180° about the x -axis.

[3 markah]
[3 marks]

KEDAH**KERTAS 1**

14. a) Diberi $y = \frac{x}{2x-3}$. Tunjukkan $\frac{dy}{dx} = -\frac{3}{(2x-3)^2}$.

Seterusnya cari $\int \frac{1}{(2x-3)^2} dx$.

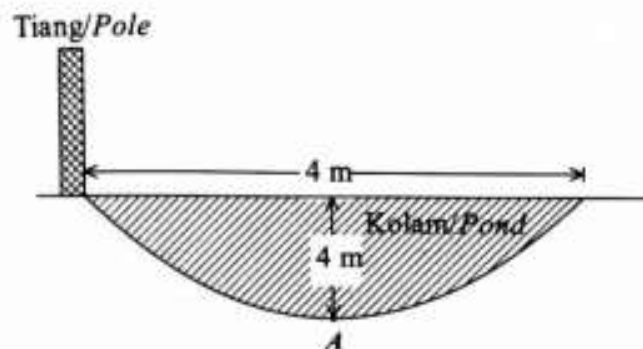
Given $y = \frac{x}{2x-3}$. Show that $\frac{dy}{dx} = -\frac{3}{(2x-3)^2}$.

Hence, find $\int \frac{1}{(2x-3)^2} dx$.

[2 markah/ marks]

- b) Rajah 14 menunjukkan sebuah kolam dengan keadaan isipadu air adalah maksimum.

Diagram 14 shows a pond such that the water volume is maximum.



Rajah 14 / Diagram 14

Diberi fungsi kecerunan pada titik A ialah $2x-4$ dengan keadaan y ialah kedalaman kolam, dalam m, dan x ialah lebar kolam, dalam m, diukur dari tiang.

Given the gradient function at point A is $2x-4$ where y is the depth of the pool, in m, and x is the width of the pond, in m, measured from the pole.

- Cari persamaan lengkung bagi dasar kolam.
Find the equation of the curve for the base of the pond.
- Ahmad berenang 3.5 m dari tiang. Cari jarak tegak, dalam m, Ahmad ke dasar kolam ketika itu.
Ahmad swam 3.5 m from the pole. Find the vertical distance, in m, of Ahmad to the bottom of the pool at that time.

[3 markah/ marks]

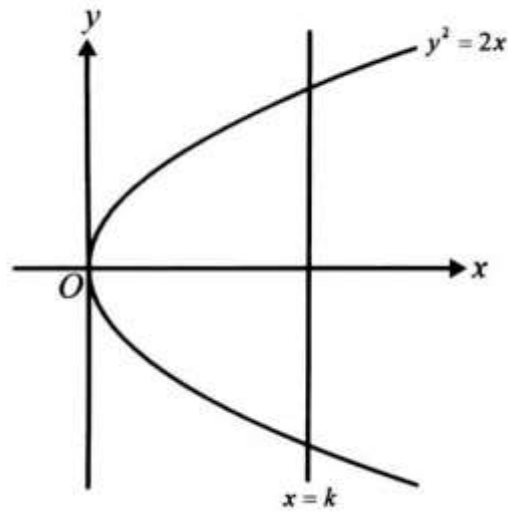
- c) Lengkung pada b(i) digerakkan 2m ke kiri, cari persamaan baharu lengkung itu. Seterusnya, cari isipadu janaan dalam sebutan π apabila luas yang dibatasi oleh lengkung itu dan paksi- x dikisarkan 180° pada paksi- y .

The curve on b(i) is moved 2m to the left, find the new equation of the curve. Hence, find the volume generated in terms of π when the area bounded by the curve and the x -axis is rotated on the y -axis.

[3 markah/ marks]

KERTAS 2

8. (b) Rajah 8(b) menunjukkan lengkung $y^2 = 2x$ bersilang pada garis lurus $x = k$.
 Diagram 8 (b) shows an intersecting curve $y^2 = 2x$ at a straight line $x = k$.



Rajah 8(b)
Diagram 8(b)

Cari nilai k apabila isipadu janaan bagi rantau yang dibatasi oleh lengkung $y^2 = 2x$, $x = k$ dan paksi- x dikisarkan 180° pada paksi $-x$ ialah 9π unit³.

Find the value of k when the volume generated bounded by the curve $y^2 = 2x$, $x = k$ and the x -axis rotated 180° on the $-x$ axis is 9π unit³.

[3 markah / marks]

SMKA & SABK**KERTAS 1**

- 6 (a) Cari nilai bagi
Find the value of

[3 markah]

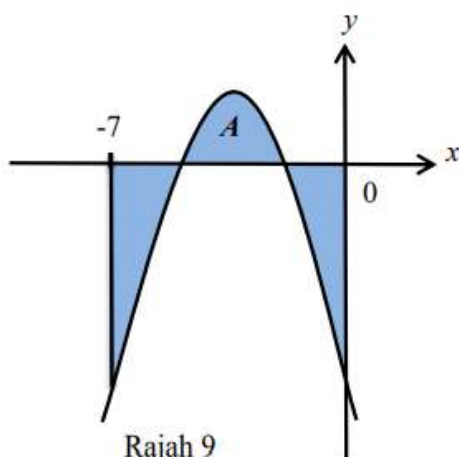
[3 marks]

$$\int_{-\frac{7}{2}}^{-3} (2p+7)^3 dp$$

- (b) Diberi suatu lengkung $y = g(x)$. Persamaan tangen kepada lengkung itu ialah $y = 10$.
Diberi $g'(x) = -x + 5$, cari persamaan lengkung itu. [4 markah]
Given a curve $y = g(x)$. The equation of the tangent to the curve is $y = 10$.
Given that $g'(x) = -x + 5$, find the equation of the curve. [4 marks]

KERTAS 2

- 9 Rajah 9 menunjukkan suatu lengkung $y = f(x)$ di mana $f(x) = -x^2 - 7x - 10$.
Diagram 9 shows a curve $y = f(x)$ where $f(x) = -x^2 - 7x - 10$.



Rajah 9
Diagram 9

Hitung
Calculate

- (a) jumlah luas kawasan berlorek,
the total area of the shaded regions, [6 markah]
[6 marks]
- (b) isipadu kisaran, dalam sebutan π , apabila rantau berlorek A dikisarkan melalui 360° pada paksi-x.
the volume of revolution, in terms of π , when the shaded region A is revolved through 360° about the x-axis. [4 markah]
[4 marks]

MELAKA**KERTAS 1**

7. Diberi $f(x) = \frac{4}{(1-2x)^3}$ dan $f'(x) = m(1-2x)^n$

Given $f(x) = \frac{4}{(1-2x)^3}$ and $f'(x) = m(1-2x)^n$

(a) Cari nilai bagi $m + n$

Find the value of $m + n$

[2 markah /2 marks]

(b) Seterusnya, cari nilai p diberi $\frac{1}{p} \int f'(x)dx = -\frac{1}{81}$ dan $x = 2$

Hence, find the value of p given $\frac{1}{p} \int f'(x)dx = -\frac{1}{81}$ and $x = 2$

[3 markah /3 marks]

KERTAS 2

10. (a) Suatu lengkung dengan fungsi kecerunan $2x - \frac{2}{x^2}$ mempunyai titik pegun di $(k, 8)$.

A curve with gradient function $2x - \frac{2}{x^2}$ has a stationary point at $(k, 8)$.

(i) Cari nilai k

[2 markah]

Find the value of k

[2 marks]

(ii) Seterusnya, dengan kaedah melakar garis tangent, tentukan sama ada titik pegun ini titik maksimum atau titik minimum dengan memberi justifikasi anda,

[3 markah]

Hence, by using sketching of tangent method, determine whether the stationary

point is a maximum or a minimum point by giving your justification [3 marks]

(b) Rajah 4 di bawah menunjukkan garis lurus yang mempunyai x-pintasan sama dengan 1 menyentuh garis lengkung $x = y^2 + 10$ pada titik $(k, 3)$. Diberi luas kawasan berlorek ialah 9 unit^2 . Dengan menggunakan kaedah pengamiran, cari nilai bagi k .

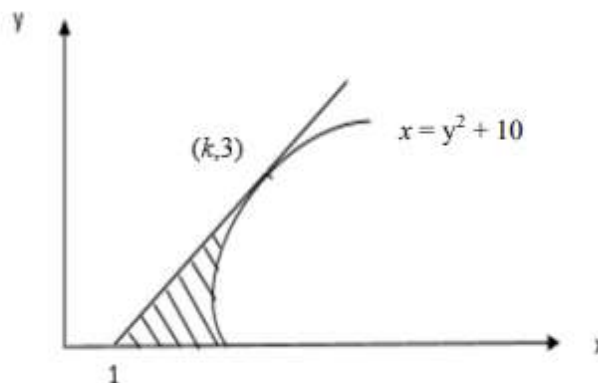
[5 markah]

Diagram 4 below shows a straight line with x-intercept 1 touches a curve $x = y^2 + 10$

at point $(k, 3)$. Given the area of shaded region is 9 unit^2 . By using integration

method, find the value of k .

[5 marks]

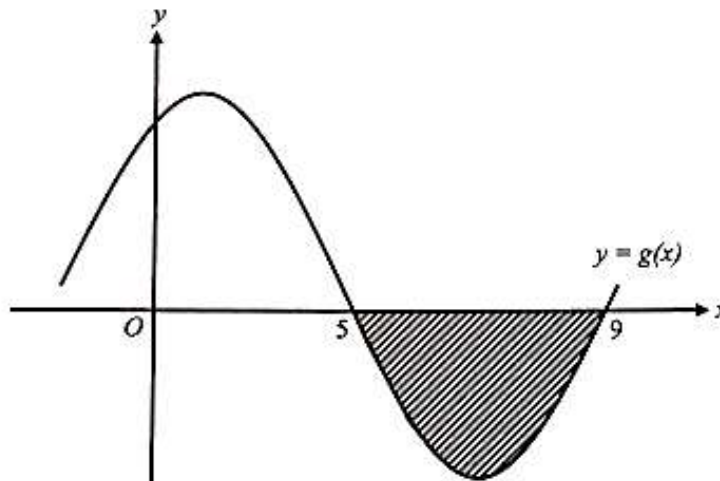


Rajah 4 / Diagram 4

TERENGGANU**KERTAS 1**

- 9 Rajah 5 menunjukkan rantau berlorek yang dibatasi oleh graf $y = g(x)$ dan paksi- x dari $x = 5$ ke $x = 9$.

Diagram 5 shows the shaded region is bounded by a graph $y = g(x)$ and x -axis from $x = 5$ to $x = 9$.



Rajah 5 / Diagram 5

Diberi bahawa luas rantau berlorek ialah 10 unit^2 .
 Given the area of shaded region is 10 unit^2 .

(a) Cari/ Find

(i) $\int_5^9 g(x) dx$.

(ii) nilai $[h(x)]_5^9$ jika $\frac{d}{dx}[2h(x)] = g(x)$.

the value of $[h(x)]_5^9$ if $\frac{d}{dx}[2h(x)] = g(x)$.

[3 markah]

[3 marks]

- (b) Diberi graf $y = g(x)$ melalui titik $(1, 96)$ dan $\frac{d}{dx}[g(x)] = 3x^2 - 24x + 17$,

cari $g(x)$ dalam sebutan x .

[2 markah]

Given the graph $y = g(x)$ passes through the point $(1, 96)$ and

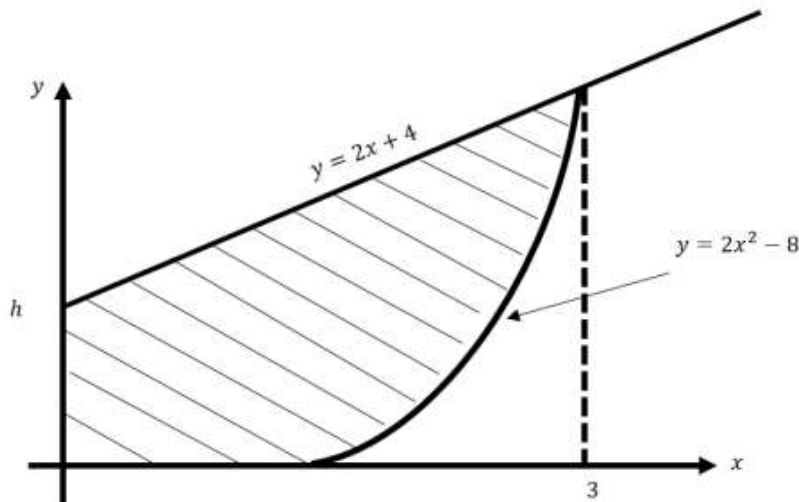
$\frac{d}{dx}[g(x)] = 3x^2 - 24x + 17$, find $g(x)$ in terms of x .

[2 marks]

PERLIS**KERTAS 2**

9. Rajah 9 menunjukkan sebahagian daripada lengkung $y = 2x^2 - 8$ dan garis lurus $y = 2x + 4$.

Diagram 9 shows part of a curve $y = 2x^2 - 8$ and a straight line $y = 2x + 4$.



Rajah 9/ Diagram 9

- (a) Hitung luas rantau berlorek.

Calculate the area of the shaded region.

[6 markah/6 marks]

- (b) Rantau yang dibatasi oleh lengkung, paksi-x, paksi-y dan garis lurus $y = h$ diputar melalui 360° pada paksi-y. Cari isi padu kisaran, dalam sebutan π .

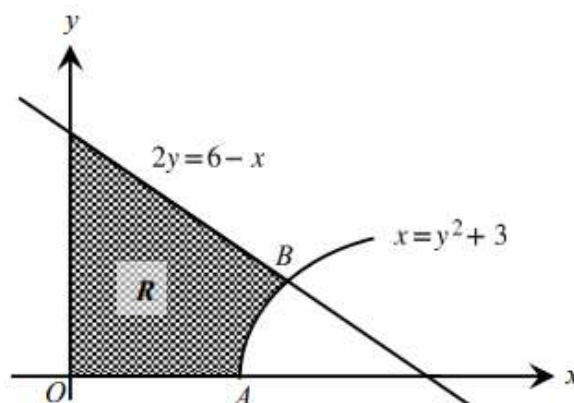
The region enclosed by the curve, the x-axis, the y-axis and the straight line $y = h$ is revolved through 360° about the y-axis. Find the volume of revolution, in terms of π .

[4 markah/4 marks]

PERAK SET 1**KERTAS 2**

- 8 Rajah 5 menunjukkan lengkung $2y = 6 - x$ bersilang dengan garis lurus $x = y^2 + 3$ pada titik B dan paksi- x pada titik A .

Diagram 5 shows the curve $2y = 6 - x$ intersects the straight line $x = y^2 + 3$ at B and the x -axis at point A .



Rajah 5
Diagram 5

Cari

Find

- koordinat titik B ,
the coordinates of point B , [3 markah]
[3 marks]
- luas rantau berlorek R ,
the area of the shaded region R , [4 markah]
[4 marks]
- isipadu yang dijanakan, dalam sebutan π , apabila rantau yang dibatasi oleh lengkung $x = y^2 + 3$, garis lurus $x = 4$ dan paksi- x dikisarkan melalui 360° pada paksi- x .

the volume generated, in terms of π , when the region bounded by the curve $x = y^2 + 3$, the straight line $x = 4$ and the x -axis is revolved through 360° about the x -axis.

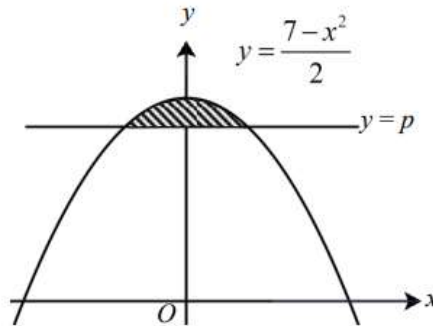
[3 markah]

[3 marks]

KELANTAN**KERTAS 1**

- 5 Rajah 3 menunjukkan sebahagian daripada graf $y = \frac{7-x^2}{2}$ dan garis lurus $y = p$, dengan keadaan p ialah pemalar.

Diagram 3 shows part of the graph $y = \frac{7-x^2}{2}$ and a straight line $y = p$, with p is a constant.



Rajah 3

Diagram 3

Hitung nilai p jika luas kawasan berlorek ialah $\frac{2}{3}$ unit².

[4 markah]

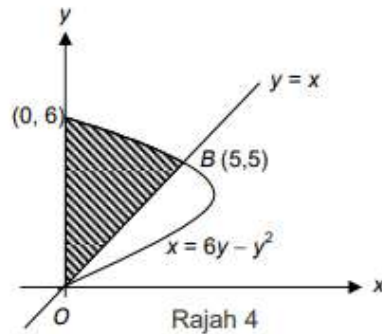
Calculate the value of p if the area of the shaded area is $\frac{2}{3}$ unit²

[4 marks]

KERTAS 2

10. Rajah 4 menunjukkan sebahagian daripada lengkung $x = 6y - y^2$ dan sebahagian daripada garis $y = x$ yang bersilang pada titik B dan titik O .

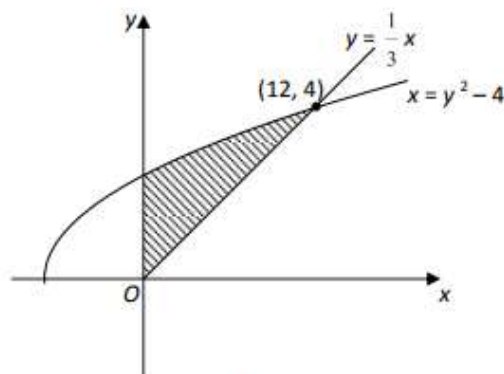
Diagram 4 shows part of curve $x = 6y - y^2$ and part of line $y = x$ that intercept at point B and point O .



Rajah 4
Diagram 4

- (a) Cari luas kawasan yang berlorek.
Find the area of shaded region.

[5 markah]
[5 marks]



Rajah 5
Diagram 5

- (b) Berdasarkan Rajah 5, hitungkan isipadu yang dijanakan apabila rantau berlorek itu dikisarkan 360° pada paksi $-x$.
Based on Diagram 5, calculate the volume generated when the shaded region is rotated 360° on the x -axis.

[5 markah]

[5 marks]

SBP**KERTAS 1**

- 9 (a) Diberi $f(x) = (1-2x)^4$ dan $\int f(x)dx = m(1-2x)^n + c$. Cari mn . [2 markah]

Given $f(x) = (1-2x)^4$ and $\int f(x)dx = m(1-2x)^n + c$. Find mn . [2 marks]

- (b) Ali dan rakannya sedang melancong di sebuah negara. Pada hari tertentu Ali dan rakannya akan pergi ke taman tema jika suhu pada hari tersebut tidak melebihi 40°C . Mengikut ramalan kaji cuaca pada hari tersebut, kadar perubahan suhu di siang hari pada hari tersebut diberi oleh $\frac{d\theta}{dt} = 0.4(5-t)$ dimana θ ialah suhu dalam $^\circ\text{C}$ dan t masa, dalam jam.

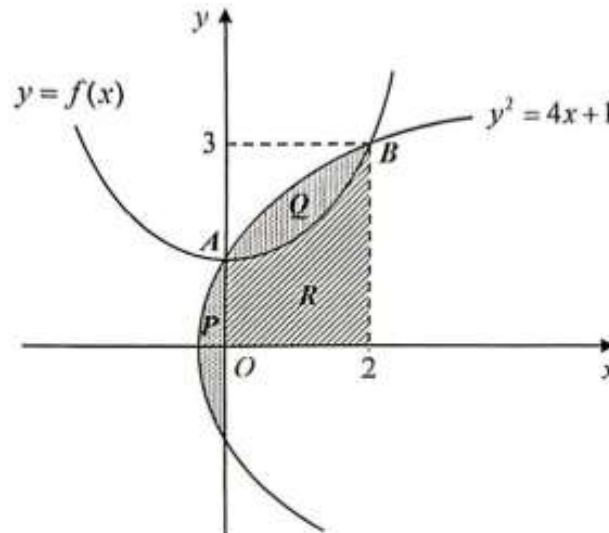
Bolehkah Ali dan rakannya mengikut pelan yang dirancang jika suhu pada pukul 7.00 pagi dimana $t = 0$ ialah 22°C ? [4 markah]

Ali and friends are visiting a country. On a particular day Ali and friends will go to a theme park if temperature on that day not more than 40°C . According to the weather forecast on that day, the rate of change of temperature is $\frac{d\theta}{dt} = 0.4(5-t)$ where θ is temperature in $^\circ\text{C}$ and t is time, in hour. Can Ali and friends proceed with the plan if the temperature at 7.00 am at $t = 0$ is 22°C ? [4 marks]

KERTAS 2

- 10 Rajah 3 menunjukkan dua lengkung $y = f(x)$ dan $y^2 = 4x + 1$. Lengkung-lengkung tersebut bersilang pada titik A dan titik B .

Diagram 3 shows two curves $y = f(x)$ and $y^2 = 4x + 1$. The curves intersect at point A and point B .



Rajah 3
Diagram 3

- (a) Nyatakan koordinat A .
State the coordinates of A .
[1 markah]
[1 mark]
- (b) Diberi bahawa $\int_0^2 f(x)dx = m$. Cari luas kawasan berlorek P dan Q dalam sebutan m .
It is given that $\int_0^2 f(x)dx = m$. Find the area of the shaded region P and Q in terms of m .
[5 markah]
[5 marks]
- (c) Kira isipadu janaan, dalam sebutan π , apabila rantau R dikisarkan 360° pada paksi- x jika luas keratan rentasnya ialah $\frac{1}{4}\pi(x^4 + 4x^2 + 4)$.
Find the volume generated, in terms of π , when the region R is revolved 360° about the x -axis if the area of its cross-section is $\frac{1}{4}\pi(x^4 + 4x^2 + 4)$.
[4 markah]
[4 marks]