

Do you want to score A in Additional Mathematics?



**MASTER  
THESE  
QUESTIONS**

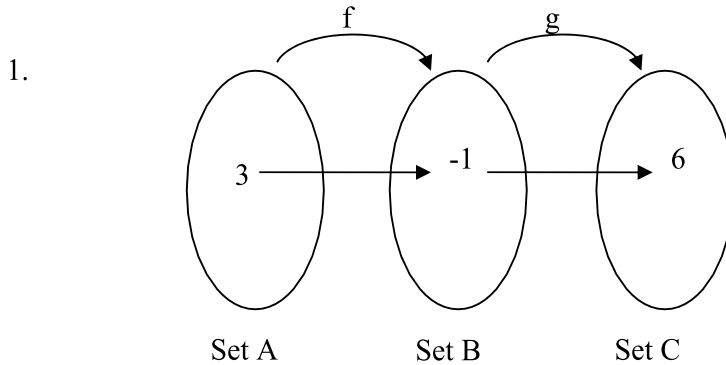
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XVIII

# MODUL 1 - KERTAS 1

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use only

Answer all questions.



In Diagram 1, the function  $f$  maps set A to set B and the function  $g$  maps set B to set C.

Determine

- (a)  $f(3)$
- (b)  $g(-1)$
- (c)  $gf(3)$

[ 3 marks ]

Answer : (a) .....

(b) .....

(c).....

1

3

2. Given function  $f : x \rightarrow 3 - 4x$  and function  $g : x \rightarrow x^2 - 1$ , find

- (a)  $f^{-1}$ ,
- (b) the value of  $f^{-1}g(3)$ .

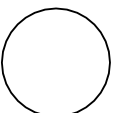
[ 3 marks ]

Answer : (a) .....

(b) .....

2

3



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3 Given the function  $f(x) = 4x$ ,  $x \neq 0$  and the composite function  $f \circ g(x) = \frac{-16}{x}$ . Find

(a)  $g(x)$ ,

(b) the value of  $x$  when  $g(x) = 8$ .

[3 marks]

3

3

Answer : .....

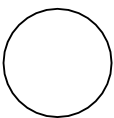
4 Solve the quadratic equation  $2x(x - 5) = (2 - x)(x + 3)$ . Give your answer correct to four significant figures.

[ 3 marks ]

4

3

Answer : .....



- 5 (a) Given  $x = \frac{4-y}{2}$ , find the range of  $x$  if  $y > 10$ .  
 (b) Find the range of  $x$  if  $x^2 - 2x \leq 3$ .

[4 marks]

Answer : .....

- 6 Diagram below shows the graph of a quadratic function  $y = f(x)$ . The straight line  $y = -9$  is a tangent to the curve  $y = f(x)$ .

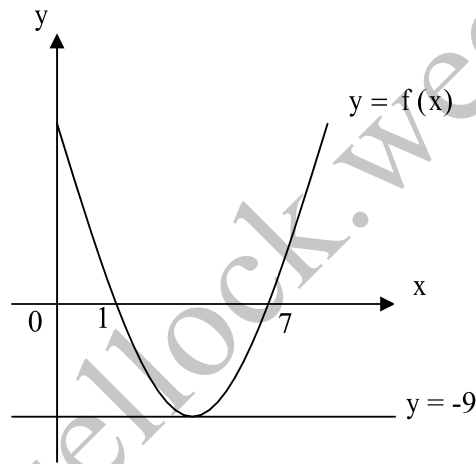


Diagram 1

- a) Write the equation of the axis of symmetry of the curve.  
 b) Express  $f(x)$  in form of  $(x + p)^2 + q$ , where  $p$  and  $q$  are constants.

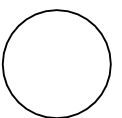
[ 3 marks ]

Answer : (a) .....

(b) .....

6

	3
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7

Solve the equation  $32^{4x} = 4^{8x+6}$

[3 marks]

7

3

Answer : .....

8. Given  $\log_5 3 = 0.683$  and  $\log_5 7 = 1.209$ . Calculate  
(i)  $\log_5 1.4$ ,  
(ii)  $\log_7 75$ .

[4 marks]

8

4

Answer : .....

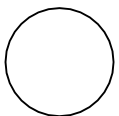
9. Solve the equation  $\log_{\sqrt{x}} 16 - \log_{\sqrt{x}} 2 = 3$ .

[3 marks]

9

3

Answer : .....



10. The first terms of the series are 2, x, 8. Find the value of x such that the series is a  
(a) an arithmetic progression,  
(b) a geometric progression. [2 marks ]

Answer : .....

10

2
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- 
11. The sum of the first n terms of an arithmetic progression is given by  $S_n = 3n^2 + 13n$ .  
Find  
(a) the ninth term,  
(b) the sum of the next 20 terms after the 9<sup>th</sup> terms.

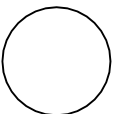
[3 marks]

Answer: a).....

b) .....

11

4
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12. Given that  $\frac{1}{p} = 0.1666666666\dots$

$$= 0.1 + a + b + \dots$$

[ 3 marks ]

Find the values of a and b. Hence, find the value of p.

12

4

Answer: a = ..... b = .....

p = .....

13. Diagram 2 shows a linear graph of  $\frac{y}{x}$  against  $x^2$

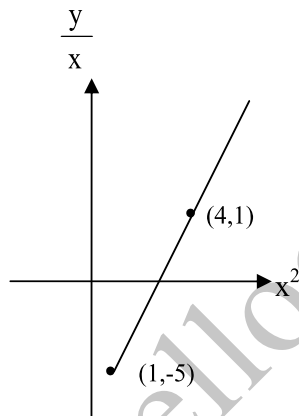


DIAGRAM 2

Given that  $\frac{y}{x} = hx^2 + k$ , where k and h are constants.

Calculate the value of h and k.

[3 marks]

13

3

Answer : h = .....

k = .....

14. The equation of a straight line PQ is  $\frac{x}{3} + \frac{y}{2} = 1$ . Find the equation of a straight line that is parallel to PQ and passes through the point  $(-6, 3)$ . [3 marks]

14

3
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Answer : .....

- 
- 15 Given  $u = \begin{pmatrix} 7 \\ 9 \end{pmatrix}$  dan  $v = \begin{pmatrix} p-1 \\ 3 \end{pmatrix}$ , find the possible values of  $p$  for each of the following case:

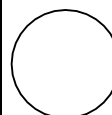
- (a)  $u$  and  $v$  are parallel, [2 marks]  
(b)  $|u| = |v|$ . [2 marks]

15

4
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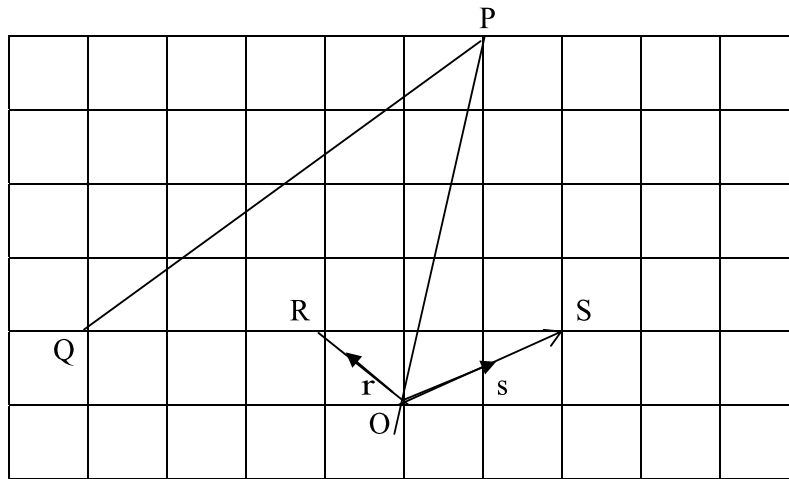
Answer : a).....

b) .....





16



The diagram above shows  $\vec{OR} = r$ ,  $\vec{OS} = s$ ,  $\vec{OP}$  and  $\vec{PQ}$  are drawn in the square grid.  
Express in terms of  $r$  and  $s$ .

- (i)  $\vec{OP}$
- (ii)  $\vec{PQ}$ .

[ 3 marks ]

16

3

Answer: a)  $\vec{OP} = \dots\dots\dots$

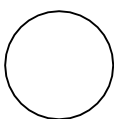
b)  $\vec{PQ} = \dots\dots\dots$

17. Solve the equation  $3 \cos^2 \theta + \sin 2\theta = 0$  for  $0^\circ \leq \theta \leq 360^\circ$ .

[ 4 marks ]

17

4



Answer:  $\dots\dots\dots$

18.

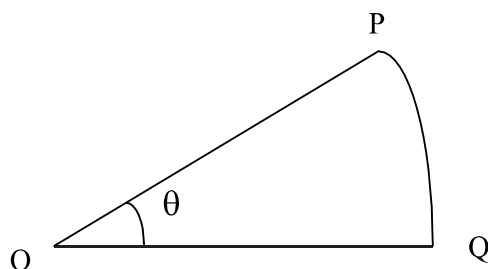


Diagram above shows a length of wire in the form of sector OPQ, centre O.  
The length of the wire is 100 cm. Given the arc length PQ is 20 cm, find

- (a) the angle  $\theta$  in radian, [2 marks]  
 (b) area of the sector OPQ. [2 marks]

Answer: a).....  
 b) .....

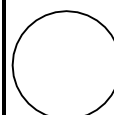
18

4
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19. Find the equation of the tangent to the curve  $y = \frac{5}{(x-5)^3}$  at the point (3, 4). [2 marks]

19

2
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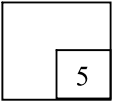
Answer:.....

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use only

20. A roll of wire of length 60 cm is bent into the shape of a circle. When above the wire is heated, its length increases at a rate of  $0.1 \text{ cms}^{-1}$ . (Use  $\pi = 3.142$ )

- (i) Calculate the rate of change of radius of the circle. [2 marks]  
(ii) Hence, calculate the radius of the circle after 4 seconds. [2 marks]

20



Answer: .....

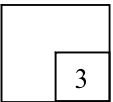
21. Given  $\int_0^4 f(x) dx = 5$  and  $\int_1^3 g(x) dx = 6$ .

Find the value

(a)  $\int_0^4 2f(x) dx + \int_3^1 g(x) dx$ , [1 marks]

(b) k if  $\int_1^3 [g(x) - kx] dx = 14$ . [2 marks]

21



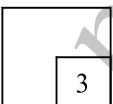
Answer: a) .....

k = .....

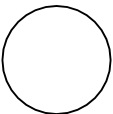
22. A chess club has 10 members of whom 6 are men and 4 are women. A team of 4 members is selected to play in a match. Find the number of different ways of selecting the team if

- (a) all the players are to be of the same gender,  
(b) there must be an equal number of men and women.

22



[3 marks]



Answer: p = .....

3472/1

23. (a) Given that the mean for four positive integer is 9. When a number y is added to the four positive integer, the mean becomes 10. Find the value of y.

[2 marks]

(b) Find the standard deviation for the set of numbers 5, 6, 6, 4, 7.

[3 marks]

Answer: ...a).....

b) .....

23

5
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24. Hanif , Zaki and Fauzi will be taking a driving test. The probabilities that Hanif , Zaki and Fauzi will pass the test are  $\frac{1}{2}$ ,  $\frac{1}{3}$  and  $\frac{1}{4}$  respectively. Calculate the probability that

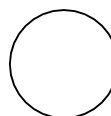
- (a) only Hanif will pass the test
- (b) at least one of them will pass the test.

[ 3 marks ]

24

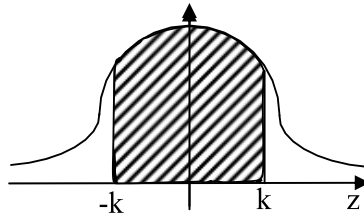
3
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Answer: .....

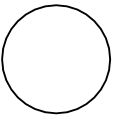
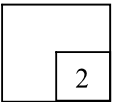


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25. Diagram below shows a standard normal distribution graph.



25



Given that the area of shaded region in the diagram is 0.7828, calculate the value of  $k$ .  
[ 2 marks ]

Answer: .....

END OF QUESTION PAPER

3472/1

## JAWAPAN

1	(a) -1 (b) 6 (c) 6	13	$h = 2$ , $k = -7$
2	(a) $f^{-1} = \frac{3-x}{4}$ (b) $-\frac{5}{4}$	14	$3y = -2x - 3$
3	(a) $g(x) = \frac{-4}{x}$ , $x \neq 0$ (b) $x = -\frac{1}{2}$	15	(a) $\frac{10}{3}$ (b) -10, 12
4	3.562 , -0.5616	16	(b)(i) $3r + 2s$ (ii) $-r - 3s$
5.	(a) $x < -3$ (b) $-1 \leq x \leq 3$	17	$90^\circ$ , $123^\circ 41'$ , $270^\circ$ , $303^\circ 41'$
6	a) $x = 4$ b) $f(x) = (x-4)^2 - 9$	18	(a) $\frac{1}{2}$ (b) 400
7	$x = 3$	19	$15x + 16y - 109 = 0$
8	(i) 0.209 (ii) 2.219	20	(i) $0.01591 \text{ cms}^{-1}$ (ii) 9.612
9	$x = 4$	21	(a) 4 (b) $k = -2$
10	a) 5 b) 4	22	14 553
11	(a) 64 (b) 2540	23	(a) 14 (b) 1.020
12	$a = 0.06$ , $b = 0.006$ , $p = 6$	24	(a) $\frac{9}{35}$ (b) $\frac{5}{6}$
		25	$k = 1.234$