Please check the examination details below	ow before entering your candidate information
Candidate surname	Other names
Centre Number Candidate Nu	umber
Pearson Edexcel Inter	national Advanced Level
Time 1 hour 30 minutes	Paper reference WFM01/01
Mathematics	•
International Advanced Su	uhsidiary/Advanced Level
	•
Further Pure Mathematics	6 F 1
You must have:	Total Marks
Mathematical Formulae and Statistica	- 11 1
1	

Candidates may use any calculator permitted by Pearson regulations.

Calculators must not have the facility for symbolic algebra manipulation, differentiation and integration, or have retrievable mathematical formulae stored in them.

Instructions

- Use black ink or ball-point pen.
- If pencil is used for diagrams/sketches/graphs it must be dark (HB or B).
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer all questions and ensure that your answers to parts of questions are clearly labelled.
- Answer the questions in the spaces provided
 there may be more space than you need.
- You should show sufficient working to make your methods clear.
 Answers without working may not gain full credit.
- Inexact answers should be given to three significant figures unless otherwise stated.

Information

- A booklet 'Mathematical Formulae and Statistical Tables' is provided.
- There are 9 questions in this question paper. The total mark for this paper is 75.
- The marks for each question are shown in brackets
 use this as a guide as to how much time to spend on each question.

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.
- If you change your mind about an answer, cross it out and put your new answer and any working underneath.

Turn over ▶





1. $z_1 = 3 + 3i$ $z_2 = p + qi$ $p, q \in \mathbb{R}$

Given that $|z_1z_2| = 15\sqrt{2}$

(a) determine $|z_2|$

(2)

Given also that p = -4

(b) determine the possible values of q

(2)

(c) Show z_1 and the possible positions for z_2 on the same Argand diagram.

(2)

v v v v 1
$\times\!\!\times\!\!\times$
XXX
>>>>
$\times\!\!\times\!\!\times$

>>>>
$\times\!\!\times\!\!\times$

>>>>>
\times
×144
86
× va
\times
$\times \times \times$
\times
$\times \mapsto$
$\times \odot$
\otimes
DO NOT WRITE IN THIS AREA
XXX
$\times\!\!\times\!\!\times\!\!\times$
XXX
$\times\!\!\times\!\!\times\!\!\times$
XXX
$\times\!\!\times\!\!\times\!\!\times$
$\times\!\!\times\!\!\times$
>>>>
$\times\!\!\times\!\!\times$

>>>>
>>>>
$\times\!\!\times\!\!\times\!\!\times$
\times MA
\times ac \times
$\times\!\!\times\!\!\times\!\!\times$
\times
$\times \times \times$
$\times\!\!\times\!\!\times\!\!\times$
Z
Z
TEIN
RITEAN
VRITEIN
WRITEIN
F WRITE IN
OT WRITE IN
OT WRITE IN
NOT WRITE IN
NOT WRITE IN
O NOT WRITE IN
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN
A
A
REA
AREA
THIS AREA
THIS AREA
IN THIS AREA
E IN THIS AREA
E IN THIS AREA
E IN THIS AREA
RITE IN THIS AREA
RITE IN THIS AREA
RITE IN THIS AREA
I WRITE IN THIS AREA
I WRITE IN THIS AREA
I WRITE IN THIS AREA
I WRITE IN THIS AREA
I WRITE IN THIS AREA
RITE IN THIS AREA

Question 1 continued



Question 1 continued

****** I
****** I

******* I
XXXXXX
$\times\!\!\times\!\!\times\!\!\times$
XXXXXX
HA A
\times
<u> </u>
×
X XX X
∞
×=×
\otimes
∞ ```
$\times \times \times \times \times \times$
$\times \times \times \times \times \times$
Ö
$\otimes \odot \otimes \Box$
NOT
2
88888888
$\times\!\!<\!\!\infty$
(O)
00
****** I
****** I
XXXX
$\times\!\!\times\!\!\times\!\!\times$
XXXX
XXXX
****** I
XXX
>>>>> I
××××× 1
××××× 1
4
4
ΕA
ΕA
ΕA
qrea
qrea
qrea
qrea
IS AREA
HS AREA
HS AREA
HS AREA
THIS AREA
THIS AREA
NTHIS AREA
NTHIS AREA
IN THIS AREA
IN THIS AREA
IN THIS AREA
TE IN THIS AREA
TE IN THIS AREA
HTE IN THIS AREA
RITE IN THIS AREA
RITE IN THIS AREA
WRITE IN THIS AREA
WRITE IN THIS AREA
WRITE IN THIS AREA
T WRITE IN THIS AREA
JT WRITE IN THIS AREA
OT WRITE IN THIS AREA
OT WRITE IN THIS AREA
OT WRITE IN THIS AREA
NOT WRITE IN THIS AREA
NOT WRITE IN THIS AREA
O NOT WRITE IN THIS AREA
O NOT WRITE IN THIS AREA
NOT WRITE IN THIS AREA

Question 1 continued	
(Total for Question 1 is 6 marks)	



$$f(x) = 10 - 2x - \frac{1}{2\sqrt{x}} - \frac{1}{x^3} \qquad x > 0$$

(a) Show that the equation f(x) = 0 has a root α in the interval [0.4, 0.5]

(2)

(b) Determine f'(x).

(3)

(c) Using $x_0 = 0.5$ as a first approximation to α , apply the Newton-Raphson procedure once to f(x) to find a second approximation to α , giving your answer to 3 decimal places.

(2)

The equation f(x) = 0 has another root β in the interval [4.8, 4.9]

(d) Use linear interpolation once on the interval [4.8, 4.9] to find an approximation to β , giving your answer to 3 decimal places.

(2)



Question 2 continued	



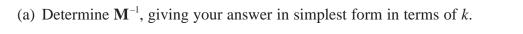
Question 2 continued

$\Diamond \Diamond$		$\times \rangle$
∞	\propto	\times
\triangle	<><	\times
$\Delta \Delta$	22	×
88	82	××
\otimes	22	X
\triangle	~~	×
88	88	×>
$\Diamond \Diamond$	a	8
	₩.	K
88	Û	۱K.
		e.
$\times\!\!\times$		•
$\times \times$	ä	ð.
\otimes	\times	ĸ
$\times \times$	SA	X
$\langle \rangle \langle$	Û	162
\otimes	7	Z.
$\Diamond \Diamond$	×	Z>
	<u> 1</u>	\sim
∞		ℵ
	-	×
		\times
\triangle	ä	ю
$\Diamond \Diamond$		$\leq >$
88	\propto	
$\times \times$	Û	ii×.
$\times\!\!\times$	м	Ø.
$\times\!\!\times$	R	\sim
$\times\!\!\times$	K	\propto
$\times\!\!\times$	×	€
		×
$\propto \sim$		ĕ≳
88	5	ú2
$\Diamond\Diamond$	~	82
$\Diamond \Diamond$		\sim
\otimes	íX.	$\times \rangle$
\times	ĸ	*
\times		\Diamond
$\Diamond\Diamond$	Œ	8 0
	4	$\leq \leq$
\times	5	×
\otimes	نيكار	۱×.
$\times \times$	$\times\!$	X
$\times \times$	abla	W
$\times \times$	ڪڙ	ØK.
$\overset{\times}{\otimes}$	È	\sim
\otimes		×
$\times \times$	XX	7×
	\times	X
\otimes	SS	~
\times	X,	~>
$\Diamond \Diamond$	X.	\times
$\overset{\times}{\otimes}$	93	$\times \rangle$
$\circ\circ$	×.	$\times \rangle$
$\circ\circ$	S.	$\times \rangle$
$\circ\circ$	\propto	\times
\times	×.	$\times angle$
$\Diamond \Diamond$	×,	\times
\sim		
	\sim	
$\Diamond \Diamond$	\times	×
$\Diamond \Diamond$	\otimes	8
$\Diamond \Diamond$	\otimes	\otimes
$\Diamond \Diamond$	*	*
	X	*
\otimes	\otimes	× ×
	X	× ×
	\otimes	*
\otimes	*	
*	*	
	*	
	*	
	*	
	Z L	
	Z L	
	A R F A	

Question 2 continued	
	(Total for Question 2 is 9 marks)



 $\mathbf{M} = \begin{pmatrix} k & k \\ 3 & 5 \end{pmatrix}$ where k is a non-zero constant 3.



(2)

Hence, given that $\mathbf{N}^{-1} = \begin{pmatrix} k & k \\ 4 & -1 \end{pmatrix}$

(b) determine $(MN)^{-1}$, giving your answer in simplest form in terms of k.

(2)

Ш	
ı	
ı	
ı	
ı	
ı	
ı	
ı	
ı	
ı	
ı	
ı	
ı	
ı	
ı	
ı	
ı	
ı	
ı	
ı	
ı	
ı	
ı	
1	

2		х			
		V			
				2	Κ
?	Ç,	É		r	
	ď			Ľ	
l	×			7	s
7	V	N	⊮	Ч	ŀ
	а	×	B)	ø	r
	×		ú	à	ĸ
1	M	r			
		,	=	e	B.
			ú	à	
?	V				
	"	Z	7		
				Э	
	Ġ			ь	
	а	и	Б.	a	
0	ă	7		3	К
2		=	ø	۹	ŗ.
	0	=	è	ú	
			г	7	
	Ú			'n	ŕ
	Š	~			
	И	Ŀ	ú	è	
>	U	К	7	7	
		7			
	×	X			ĸ
	۲.	ä	ρ	ς	
	4		'n	×	ŕ
	×		4	ì	
	0	$\overline{}$	7	₹	
		v			
	K	D	ľ	٦	Ł
	a				
	ä	v			
	K	K	ĸ.	à	ď
				C	
	X	K	2	2	í
	S	K	2	2	į
	8	Ŕ	2	5	K
?	R	È	Ý		6
>	į	È	Ý		
		È	Ý		
	K	È	Ý		
>		È	Ý		
>>>>			Ý		
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>					
<pre></pre>					
<pre></pre>					
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>					
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>					
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>					
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>					
<pre></pre>					
/ >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>					
/ / / / / / / / / / / / / / / / / / /					
/ / / / / / / / / / / / / / / / / / /					
/ / / / / / / / / / / / / / / / / / /					
/>>>>>>>>					
/ >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>					
/ / / / / / / / / / / / / / / / / / /					
/ / / / / / / / / / / / / / / / / / /					

Question 3 continued
(Total for Organism 2 in A monitor)
(Total for Question 3 is 4 marks)



4.	$f(z) = 2z^4 - 19z^3 + Az^2 + Bz - 156$
----	---

where A and B are constants.

The complex number 5 - i is a root of the equation f(z) = 0

(a) Write down another complex root of this equation.

(1)

(b) Solve the equation f(z) = 0 completely.

(5)

(c) Determine the value of A and the value of B.

(2)



Question 4 continued



Question 4 continued

		Ė				
	ė					
	ì					
	Ņ					
		Ĭ				
	1				ì	
	1	3		9	è	
	1	Ş		2	Ì	
S	1	į		2		
>	4					
>	4					֡
>	444					֡
?	100					
>	1000		2000			
>	1000	XXX	1 1 1 1 1 1 X			
>	1000		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
>	100	N X X L				
>>>	1					
>>>>						
>>>>		N X X K K				
>>>>>>		N X X L X X				
>>>>>						
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>						
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>						֡
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>						
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>						
>>>>>						
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>						
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>						
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>						֡
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>						֡
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>						
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>						
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>						
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>						
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>						
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>						
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>						
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>						
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>						
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>						
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>						

Question 4 continued	
(Total fo	or Question 4 is 8 marks)



5. The quadratic equation

$$2x^2 - 3x + 5 = 0$$

has roots α and β

Without solving the equation,

(a) write down the value of $(\alpha + \beta)$ and the value of $\alpha\beta$

(1)

- (b) determine the value of
 - (i) $\alpha^2 + \beta^2$
 - (ii) $\alpha^3 + \beta^3$

(4)

(c) find a quadratic equation which has roots

$$(\alpha^3 - \beta)$$
 and $(\beta^3 - \alpha)$

giving your answer in the form $px^2 + qx + r = 0$ where p, q and r are integers to be determined.

(5)



Question 5 continued



Question 5 continued

Question 5 continued	
(Tot	al for Question 5 is 10 marks)
· · · · · · · · · · · · · · · · · · ·	,



6. The parabola C has equation $y^2 = 36x$

The point $P(9t^2, 18t)$, where $t \neq 0$, lies on C

(a) Use calculus to show that the normal to C at P has equation

$$y + tx = 9t^3 + 18t$$

(4)

(b) Hence find the equations of the two normals to C which pass through the point (54, 0), giving your answers in the form y = px + q where p and q are constants to be determined.

(4)

Given that

- the normals found in part (b) intersect the directrix of C at the points A and B
- the point F is the focus of C
- (c) determine the area of triangle AFB

(3)





Question 6 continued



Question 6 continued

Question 6 continued
(Total for Question 6 is 11 marks)
(Total for Question of 15 11 marks)



$$\mathbf{A} = \begin{pmatrix} -\frac{\sqrt{3}}{2} & -\frac{1}{2} \\ \frac{1}{2} & -\frac{\sqrt{3}}{2} \end{pmatrix}$$

(a) Determine the matrix A^2

(1)

(b) Describe fully the single geometrical transformation represented by the matrix \mathbf{A}^2

(2)

(c) Hence determine the smallest positive integer value of n for which $\mathbf{A}^n = \mathbf{I}$

(1)

The matrix **B** represents a stretch scale factor 4 parallel to the x-axis.

(d) Write down the matrix **B**

(1)

The transformation represented by matrix ${\bf A}$ followed by the transformation represented by matrix ${\bf B}$ is represented by the matrix ${\bf C}$

(e) Determine the matrix **C**

(2)

The parallelogram P is transformed onto the parallelogram P' by the matrix \mathbb{C}

(f) Given that the area of parallelogram P' is 20 square units, determine the area of parallelogram P

(2)





Question 7 continued	



Question 7 continued

	ς,	Χ	2		
5		É	2	d	
	×			15	
		≂		è	
\	Δ	ď	S.	Ã	
	Ñ		r	Я	
	Œ	,	7	e	
	\times		Ġ	a	
	M	\sim	к	Z	
	ø	~	=	•	
			ú		
?	ŷ				
		▽	9		
	×			2	
	۲.	×		٤	
	b	Li	ĸ	Я	
		•	ĸ.	¥	
	G	~	è	6	
		2	S		
	y	-	r	۹	
>		v	ь	4	
C	K		٠	9	
	a	ĸ	2	Š	
١	4	۳	۰	,	
		т,			
				S	
ì.	7	₹			
	V	a	r	٦	
	Œ	,	,	۰	
	28	-	ú	n	
		$^{\sim}$			
	/2	s.		۷.	
\rangle	a	ы	Ь	d	
\langle	8	K	5	9	
?	9	K		2	
>	8	K		2	ľ
?		X	2		
>		K	2		
>		K			
>	Š	K			
>	Š	K K			
>	Š				
>	Š				
>	Š				
>	Š				
> > >	Š				
> > > >	Š	区域及及2000年区域及2000年			
>>>>>	Š	**			
> > > >	Š	* T X X X X X X X X X X X X			
> > > >	Š				
> > > >	Š				
> > > >					
> > > >					
> > > >					

Question 7 continued	
(Tr.	tal for Question 7 is 0 marks)
(10	tal for Question 7 is 9 marks)



8. (a) Use the standard results for $\sum_{r=1}^{n} r^2$ and $\sum_{r=1}^{n} r$ to show that for all positive integers n

$$\sum_{r=0}^{n} (r+1)(r+2) = \frac{1}{3}(n+1)(n+2)(n+3)$$

(b) Hence determine the value of

$$10 \times 11 + 11 \times 12 + 12 \times 13 + ... + 100 \times 101$$

(3)

(5)

Question 8 continued



Question 8 continued

		?				
					2	Κ
	ż	à	й		r	5
	ą	٩	×		k	
					7	g
2		ľ	g	ν	q	
		ú	à	Z.	۵	ď
		P	₹		₹	
			Ħ			ŀ
			١	۷	2	
	ì		è		r	
	9	3	9		ь	ś
					7	
	0			2	۷	
		ľ	ũ			ĸ
				ŗ	Ч	ŀ
	j	ú	4	2	4	2
				ζ	7	
	Ì	,		,	۰	Ŗ,
١		S	И	Ŀ		
1	Ą		۰	۰	۰	ĸ
		ř				
١,			ı	۰	p	В.
		ľ				
					К	
	9	ŧ	,			Ķ.
	i	ú		r	٦,	
	Į	,	Ħ	9	ę	ŋ
		i	ú	ú	×	
			5	/		
	ì	٥			4	
		ı		ĸ.	э	
		ī	3	5	7	3
		į	2	5	3	r r
>			2	7	2	5
	í			2		K
	í				- -	K K K
	í					
	ĺ	į		2		
	ĺ	į		2		
	ĺ	į		2		
	ĺ	į		2		
	ĺ	į		2		
	ĺ	į				
	ĺ	į		2		
	ĺ	į		2		
	ĺ					
	ĺ					
	ĺ					

Question 8 continued
(Total for Question 8 is 8 marks)
(Total for Question o is o marks)



9. (i) A sequence of numbers is defined by

$$u_1 = 3$$

$$u_{n+1} = 2u_n - 2^{n+1}$$
 $n \geqslant 1$

Prove by induction that, for $n \in \mathbb{N}$

$$u_n = 5 \times 2^{n-1} - n \times 2^n$$

(5)

(ii) Prove by induction that, for $n \in \mathbb{N}$

$$f(n) = 5^{n+2} - 4n - 9$$

is divisible by 16

(5)

$\times\!\!\times\!\!\times\!\!\times$
×××
~~~
XXXX
REA
$\times \blacktriangleleft \times$
XIII X
$\times$
WRITE IN THIS ARE
$\times$
$\otimes$
×m×
$\times = \times$
M
$\times$
6
$\times$
ō
<u> </u>
****
****
XXXX
$\times\!\!\times\!\!\times\!\!\times$
XXXX
****
>>>>>
*****
****
$\times\!\!\times\!\!\times\!\!\times$
XXXX
$\ggg$
X 22
$\infty$
$\times$
TE IN THIS AREA
RITEAN
<u> </u>
WRITEIN
NOT WR
DO NOT WR
N DO NOT WR
N DO NOT WR
N DO NOT WR
4REA DO NOT WR
4REA DO NOT WR
S AREA DO NOT WR
S AREA DO NOT WR
THIS AREA DO NOT WRI
THIS AREA DO NOT WRI
IN THIS AREA DO NOT WR
E IN THIS AREA DO NOT WR
E IN THIS AREA DO NOT WR
E IN THIS AREA DO NOT WR
E IN THIS AREA DO NOT WR
E IN THIS AREA DO NOT WR
WRITE IN THIS AREA DO NOT WR
T WRITE IN THIS AREA DO NOT WR
IOT WRITE IN THIS AREA DO NOT WR
IOT WRITE IN THIS AREA DO NOT WR
T WRITE IN THIS AREA DO NOT WR
O NOT WRITE IN THIS AREA DO NOT WRI
NOT WRITE IN THIS AREA DO NOT WRI

			>	<				
2	ς	2	Κ					
				S	2			
			$\geq$				)	
3								
2	ς	2					٩	i
							K	
							Z.	
		Κ	>				2	
3		2			ς		٩	
		>					<	0
				É	d	٩	۴	5
			>	7	è	4	Ę	ĸ
				ú	à	í	ì	ĸ
	5	2	S		ч			ν
		>		ā	á	ã	Z	è
					Z		Z	N
		ς	>	₹	7	7	ļ	5
				6	è	۹	Р	ĸ
		2		,	٩	Ц	Ŀ	i
		>						
			S	ò		à	ĸ	
		Κ			ä	ĸ	4	K
				2	Σ	4	ě	
		2	Κ	2	Σ	Z	Σ	2
		$\rangle$		7	۹	ľ	₹	
				þ	d	h	ø	ì)
			2	ÍI.			2	
					7	₹	7	ĸ
		2		7			5	
		0		Ę	ú	À	ú	Ď
					à	9	₹	
		>	ς	á		į	Š	Κ
		2	ς					Ķ
3	3	2	2	di N				Š
3	3	3	2	di N			4	5
3	3	3	3	d	3	Ē	74	
3	3	3	3	d	3	Ē	7	
3	3	3	3	d	3	Ē		
3	3		3			Ē	7	
3	3		3					Š
3			3					K
3								K
3							7	K
3	< < <							Š
								Š
								Š
< < < < < < < < < < < < < < < < < < <								



Question 9 continued

$\times$	♦	٥	<
$\times \!\! >$	$^{\circ}$	Q	
X		X	S
X		×	5
X	×	X	$\geq$
X	X	X	
X	Š	Ŏ	2
$\times$	$\Diamond$	0	<
$\times\!\!\!>$	$\Diamond$	Q	
82	2	S	ĸ,
84	Ę	4	۶
ČΚĬ	к	и	Ď
X	H	H	Ŋ,
×4	R	۳	5
O.		Z	Þ
×	ď	ĸ	Þ
X	z	$^{\sim}$	Þ
X	ĸ	×	S
X.	ч	M	P
W	Ħ	Ħ	۲
X	Ħ	۳	
X	Ž	ě	ĸ
XX	Þ	4	Κ
$\times\!\!\!\vee$	♡	♦	≺
$\times\!\!\!\!>$	ŧ	ÿ	ĸ,
KX	ø		í,
$\times$		Ŷ	ĸ,
	Ω.	Ω	
88	и	ш	Ь
001	K	$\times$	$\geq$
	ĸ	X	Þ
Q.		4	þ
×	⍂	Е	Þ
W	š	Z	2
X	ĕ	3	P
XX	ò	3	К
$\times$	۵	Ŏ	Č
X	r	Ż	5
$\otimes$	ř		S
82	Ŷ	y	5
$\langle \rangle$	ď	ÿ	Ď
ÇΚΪ	₫	Ø	è
Q.	Ķ	Χ	$\geq$
ÇΚ	۴	z	ř
ÇC.	¥	у	Þ
X	ŕ	×	è
X	K	¥	P
X			2
××		Ŏ	2
$\times$	Š	Ŏ	<
$\times \rangle$	Ö	Õ	
$\times$		٥	C
$\times$	$\Diamond$	0	
$\times \!\! >$	$\Diamond$	0	ς
$\times\!\!\!>$	$^{\circ}$	0	ς
~			S
X		V	5
~~	X		S
$\propto$	X	×	>
$\langle \langle \rangle$	×,		$\geq$
X	×	X	$\geq$
X	X	×	
X	Š	ŏ	2
××	Š	Ŏ	Z.
$\times \!\!\! >$	$\Diamond$	0	
$\times\!\!\!>$	$\Diamond$	0	≺
$\times$			S
$\times$		×	
$\otimes$	×	X	3
$\otimes$	Š	X	3
$\stackrel{\times}{\sim}$	X	×	}
	X	X	
	X	× 10 10	
		× × × × × × × × × × × × × × × × × × ×	
		××××××××××××××××××××××××××××××××××××××	
		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	
		× × × × × × × × × × × × × × × × × × ×	
		XXXII (1) X Z Z X X Z Z	
		(1) (1) (2) (2) (2) (2) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4	
8	Ž	Ž	ζ
8	Ž	Ž	ζ
8	Ž	Ž	ζ
8	Ž	Ž	ζ
8	Ž	Ž	ζ
8	Ž	Ž	ζ
8	Ž	Ž	ζ
8	Ž	Ž	ζ
8	Ž	Ž	ζ
		Ž	

			)					
		ď						
	ς	2					ς	è
					⟨	$\rangle$	⟨	
				$\rangle$				
S		S	l					
<	2							
		≺		≺				
					7	4	è	ľ
			S	ij			Ь	١
2		2		2	ς	2	2	
					₫		4	
		>		2	á	2	Z	
					2		Z	
		Κ	>	₹	7	₹	7	
				É	è		7	
		Z		₹	9	ø	b	ŗ
		2		2	S			
			<	È	G	P	1	i
		$\rangle$		3	ę	5	ą	ľ
5	ć			Ž	۲	ŧ	Ħ	Ì
	>	ς		2	À	Ŕ	À	ĺ
				4	3	Ľ	2	
				7	5	7	5	
		2		ĺ	þ	۲	h	Į
2	ς	2	ς	?				
		$\rangle$		≦	4	À	6	i
				à	é	2	Z	
		S	2	5	Z	3	Z	
		ς		7	7	7	7	۹
		⟨		í.	À	Ĺ	ì	
				ļ	4			
			S	ã		7	5	
		2	ς		٠	ø	٩	
>				ä	4	2	4	,
		>		2	ζ	2	Ζ	
					2		Z	
		ς	2	S	ζ	S	7	
<				i			þ	į
		K		ē	ş	ĕ	è	
		2		Ì	5	7	5	
			ς	à		?	ς	
		$\rangle$			٠	þ	ę	
				3	ú	è	ζ	
		5			7		a	
			2	3	þ	Ŋ	۲	
		ς	2	٠	2		p	ļ
		≺	$\rangle$	ú		Ľ	ì	
	S							
		2	ς	à	ú	Ŕ	Ĺ	
			<				3	
		$\rangle$	<	3	턴	y	2	
	2	5		Ú	۲	9	١	
	2	ς			2	4	4	
			>	₹	5	₹	3	
			$\rangle$	≺	>		>	
	S	2						
2	Κ	2					ς	
		$\rangle$				$\rangle$		
			2	5	?			

Question 9 continued	



Question 9 continued	
(Total for Question 9 is 10 ma	rks)
TOTAL FOR PAPER: 75 MAR	RKS

