



# CLASSIFIED

International Examinations Papers

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# MODULAR MATHEMATICS/CORE-1 TOPIC-Equations and Inequalities

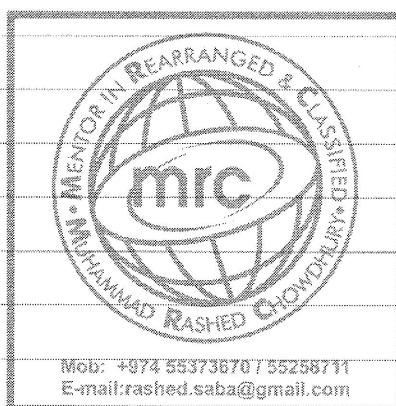
4. Solve the simultaneous equations

$$x + y = 2$$

$$x^2 + 2y = 12.$$

(6)

✓a -05



Q4

(Total 6 marks)

4. Solve the simultaneous equations

$$y = x - 2,$$

$$y^2 + x^2 = 10.$$

7a-07

(7)



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5. Solve the simultaneous equations

$$x - 2y = 1,$$

$$x^2 + y^2 = 29.$$

M-5

(6)



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**4. Solve the simultaneous equations**

$$\begin{aligned}x + y &= 2 \\4y^2 - x^2 &= 11\end{aligned}$$

7a-11 (7)



2. Solve the simultaneous equations

~71-15

$$y - 2x - 4 = 0$$

$$4x^2 + y^2 + 20x = 0$$

(7)



5. Solve the simultaneous equations

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blank

$$y + 4x + 1 = 0$$

$$y^2 + 5x^2 + 2x = 0$$

Tr-16

(6)



### **5. Solve the simultaneous equations**

$$y - 3x + 2 = 0$$

$$y^2 - x - 6x^2 = 0$$

(7)

Jg-10



6. (a) Given  $y = 2^x$ , show that

$$2^{2x+1} - 17(2^x) + 8 = 0$$

can be written in the form

$$2y^2 - 17y + 8 = 0$$

卷-17

(2)

- (b) Hence solve

$$2^{2x+1} - 17(2^x) + 8 = 0$$

(4)



6. (a) By eliminating  $y$  from the equations

*7w-7*

$$y = x - 4,$$

$$2x^2 - xy = 8,$$

show that

$$x^2 + 4x - 8 = 0.$$

(2)

- (b) Hence, or otherwise, solve the simultaneous equations

$$y = x - 4,$$

$$2x^2 - xy = 8,$$

giving your answers in the form  $a \pm b\sqrt{3}$ , where  $a$  and  $b$  are integers.

(5)



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blank

2. Find the set of values of  $x$  for which

$$x^2 - 7x - 18 > 0.$$

$\sqrt{N-6}$

(4)



Q2

(Total 4 marks)



6. Find the set of values of  $x$  for which

(a)  $3(2x + 1) > 5 - 2x,$

(2)

(b)  $2x^2 - 7x + 3 > 0,$

(4)

(c) **both**  $3(2x + 1) > 5 - 2x$  and  $2x^2 - 7x + 3 > 0.$

$\sqrt{N-5}$

(2)



4. Find the set of values of  $x$  for which

(a)  $4x - 3 > 7 - x$

(2)

(b)  $2x^2 - 5x - 12 < 0$

$\sqrt{N} - 9$

(4)

(c) both  $4x - 3 > 7 - x$  and  $2x^2 - 5x - 12 < 0$

(1)



3. Find the set of values of  $x$  for which

(a)  $3(x-2) < 8-2x$

(2)

(b)  $(2x-7)(1+x) < 0$

Zn-10 (3)

(c) both  $3(x-2) < 8-2x$  and  $(2x-7)(1+x) < 0$

(1)



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5. Find the set of values of  $x$  for which

$$(a) \quad 2(3x + 4) > 1 - x$$

(2)

$$(b) \quad 3x^2 + 8x - 3 < 0$$

78-13

(4)



Leave  
blank

3. Find the set of values of  $x$  for which

(a)  $3x - 7 > 3 - x$  (2)

$$(b) \quad x^2 - 9x \leq 36 \quad (4)$$

(c) **both**  $3x - 7 > 3 - x$  **and**  $x^2 - 9x \leq 36$  JN-14 (1)



3. Find the set of values of  $x$  for which

(a)  $4x - 5 > 15 - x$

(2)

(b)  $x(x - 4) > 12$

(4)

$\sqrt{x} - 12$



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8. The straight line with equation  $y = 3x - 7$  does not cross or touch the curve with equation  $y = 2px^2 - 6px + 4p$ , where  $p$  is a constant.

(a) Show that  $4p^2 - 20p + 9 < 0$

JN-16

(4)

(b) Hence find the set of possible values of  $p$ .

(4)

