This is a Class 1 exam

Lebanon Evangelical School
for Boys and Girls
Loueizeh - Baabda

Stage Exam 01

11NOV2022

Do NOT write in this box. Your MARK will be placed here.

Subject :	A Level : Maths M1Pure	
Class :	11A and 12A	
Teacher :	Mrs.Claudine Eid	
Duration :	30 minutes	
Calculators will be allowed		
Your name :		*Time taken to complete exam*
Your Class :		
Exam Room :		
How many sheets, including cover sheet :		

- Do not open this paper until the teacher in charge instructs you to do so.
- The most important thing to remember in taking an exam is NEVER PANIC.
- If you are caught cheating in this exam, you will be awarded zero for ALL exams that are taken on this day.

Answer ALL questions. Write your answers in the space provided

1) Solve the following system $x(x-5) \geq 36$
$-x+6 > x-4$ **(4)**

2. (a) Solve the quadratic equation

$$2x^2 - 3x + 1 = 0 \qquad \textbf{(2)}$$

(b) Hence find all real solutions of

$$2(2y - 3)^2 - 3(2y - 3) + 1 = 0 \qquad \textbf{(2)}$$

(c) Find all real solutions of

$$2(t - 3)^4 - 3(t - 3)^2 + 1 = 0 \qquad \textbf{(3)}$$

Continue 2

3.

The line with equation $y = 4x + c$ *where* c *is constant* , meets the curve with equation $y = x(x - 3)$ at only one point

(a) Find the value of c. **(4)**

(b) Hence find the coordinates of the point of intersection. **(3)**

4. Find the set of values of k for which the equation $x^2 + 2x(1-k) + 1 + k = 0$

has no real roots . **(4)**

5) On diagram 1 sketch the graphs of

(i) $y = x(3 - x)$

(ii) $y = x(x - 2)(5 - x)$

Showing clearly the coordinates of the points where the curves cross the coordinate axes. **(4)**

Continue **5**

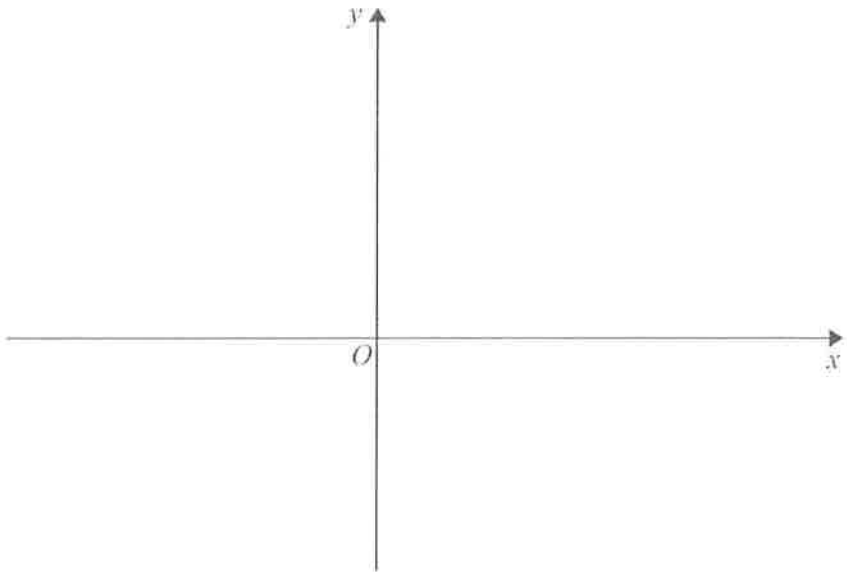


Diagram 1

6. The curve C_1 has equation $y = f(x), where$

$$f(x) = (4x - 3)(x - 5)^2$$

(a) Sketch C_1 showing the coordinates of Pand Q where the curve touches and crosses the coordinate axes respectively. **(3)**

(b) Hence find the ccordinates of P and Q in the following **(3)**

(i) $f(x + 1)$

(ii) $f(x) - 1$

(iii) $-f(x - 2)$

Continue 6

TOTAL FOR PAPER IS 32 MARKS

Answer ALL questions. Write your answers in the space provided

1) Solve the following system $x(x-5) \geq 36$
$-x+6 > x-4$ **(4)**

$x^2 - 5x - 36 \geq 0$.

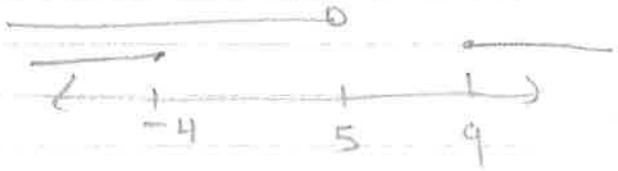
$(x-9)(x+4) \geq 0$ by either method

$x \geq 9$ or $x \leq -4$ (1) (1)

$-2x > -10$

(1) $x < 5$

$x \leq -4$ (1)



4

2. (a) Solve the quadratic equation

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(c) Find all real solutions of

$$2(t-3)^4 - 3(t-3)^2 + 1 = 0 \qquad \textbf{(3)}$$

$2x^2 - 3x + 1 = 0$

$x = 1$ (1)

or $x = \frac{1}{2}$ (1)

(2)

b. $x = 2y - 3 = 1$ $\qquad 2y - 3 = \frac{1}{2}$

$y = 2$ (1) (2) $\qquad 2y = \frac{7}{2}$

$y = \frac{7}{4}$ (1)

c. $(t-3)^2 = 1$ $\qquad (t-3)^2 = \frac{1}{2}$

$t - 3 = \pm 1$ (3) $\qquad t - 3 = \pm\sqrt{\frac{1}{2}}$

$t = 4$ or $+2$ ✓ $\qquad t = \pm\frac{1}{\sqrt{2}} + 3$ ✓

0.75 each

Continue 2

3.

The line with equation $y = 4x + c$ *where c is constant* , meets the curve with equation $y = x(x - 3)$ at only one point

(a) Find the value of c. **(4)**

(b) Hence find the coordinates of the point of intersection. **(3)**

$y = x^2 - 3x = 4x + c$ ✓

$x^2 - 7x - c = 0$ ✓ (4)

$\Delta = 49 + 4c = 0$ ✓

$c = -\frac{49}{4}$ ✓

$x = \frac{7}{2}$ ✓ 1,5 each

$y = \frac{7}{2}\left(\frac{7}{2} - 3\right)$

$= \frac{7}{2}\left(\frac{1}{2}\right) = \frac{7}{4}$ ✓

(3)

4. Find the set of values of k for which the equation $x^2 + 2x(1-k) + 1 + k = 0$

has no real roots . (4)

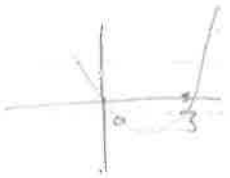
$\Delta = 4(1-k)^2 - 4(1+k) < 0$

$4(1-2k+k^2) - 4 - 4k < 0$.

$= 4 - 8k + 4k^2 - 4 - 4k$

$4k^2 - 12k < 0$.

$4k(k-3) < 0$



$0 < k < 3$

each (1)

5) On diagram 1 sketch the graphs of

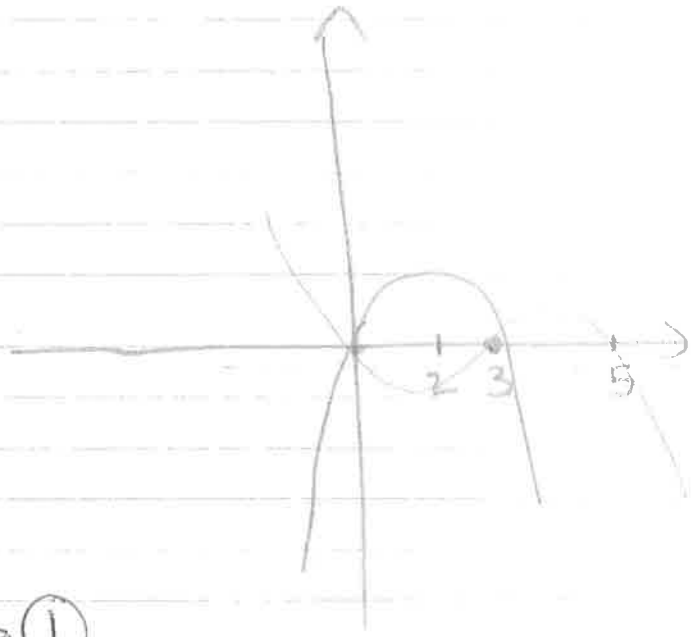
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(ii) $y = x(x - 2)(5 - x)$

Showing clearly the coordinates of the points where the curves cross the coordinate axes. **(4)**

i) shape (1)

intercepts (1)



ii) shape (1)

intercepts (1)

Continue 5

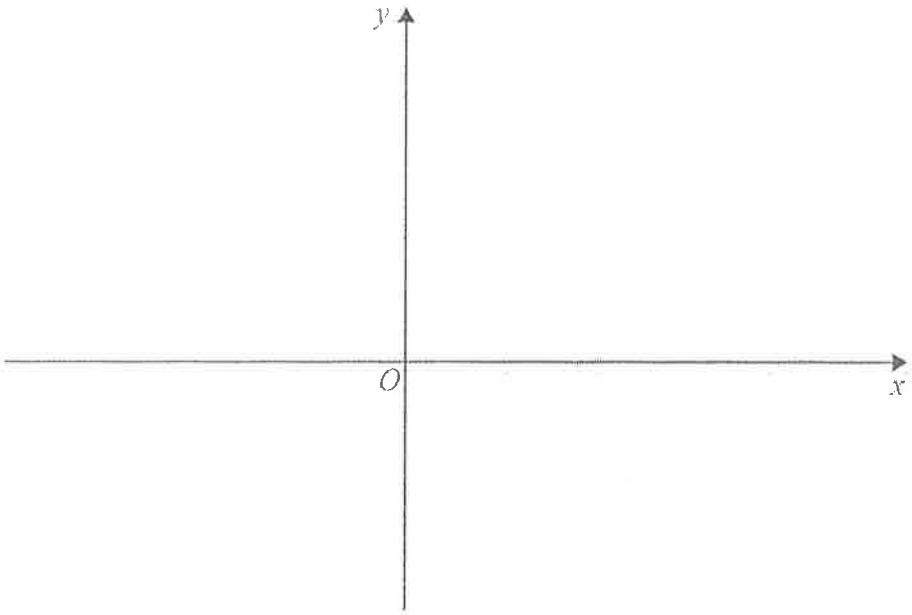


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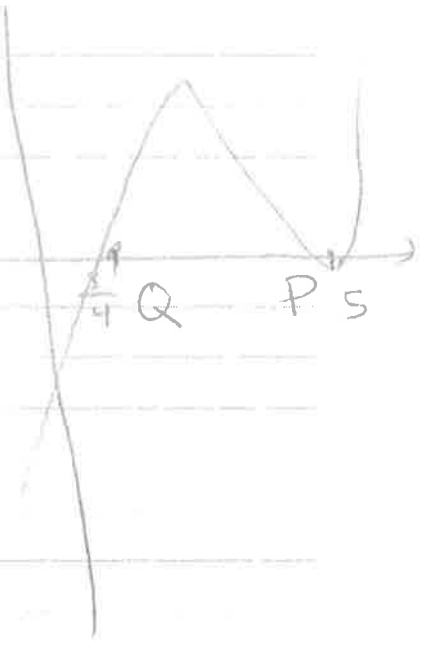
(ii) $f(x) - 1$

(iii) $-f(x - 2)$

shape 1

P (5, 0) ✓ 1

Q $(\frac{3}{4}, 0)$ ✓ 1



F(x+1) 1 unit to left

P(4, 0)

Q $(-\frac{1}{4}, 0)$ ✓ 1

F(x) − 1 P (5, −1) ✓ 1

Q $(\frac{3}{4}, -1)$

− f(x − 2) P (7, 0) ✓ 1

Q $(\frac{11}{4}, 0)$

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