This is a Class 1 exam

Lebanon Evangelical School
for Boys and Girls
Loucizeh - Baabda

Stage Exam 06

19, 20, 21JUN2023

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

Subject :	Maths
Class :	9A
Teacher :	Mrs.Claudine Eid
Duration :	1 hour
Calculators are 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

You must write down all the stages in your working.

(1) A number, m, is rounded to 1 decimal place.
The result is 9.4

Complete the error interval for m.

..... $\leqslant m <$ .....

(Total for Question 1 is 2 marks)

(2) The straight line L_1 has equation $y = 3x - 4$
The straight line L_2 is perpendicular to L_1 and passes through the point (9, 5)

Find an equation of line L_2

.....

(Total for Question 2 is 3 marks)

(3)

(a) Write down the value of 7^0

.....

(1)

(*b*) Factorise fully $8p^2 - 2p$

.....

(2)

(*c*) Expand $4t(3t - 2)$

.....

(2)

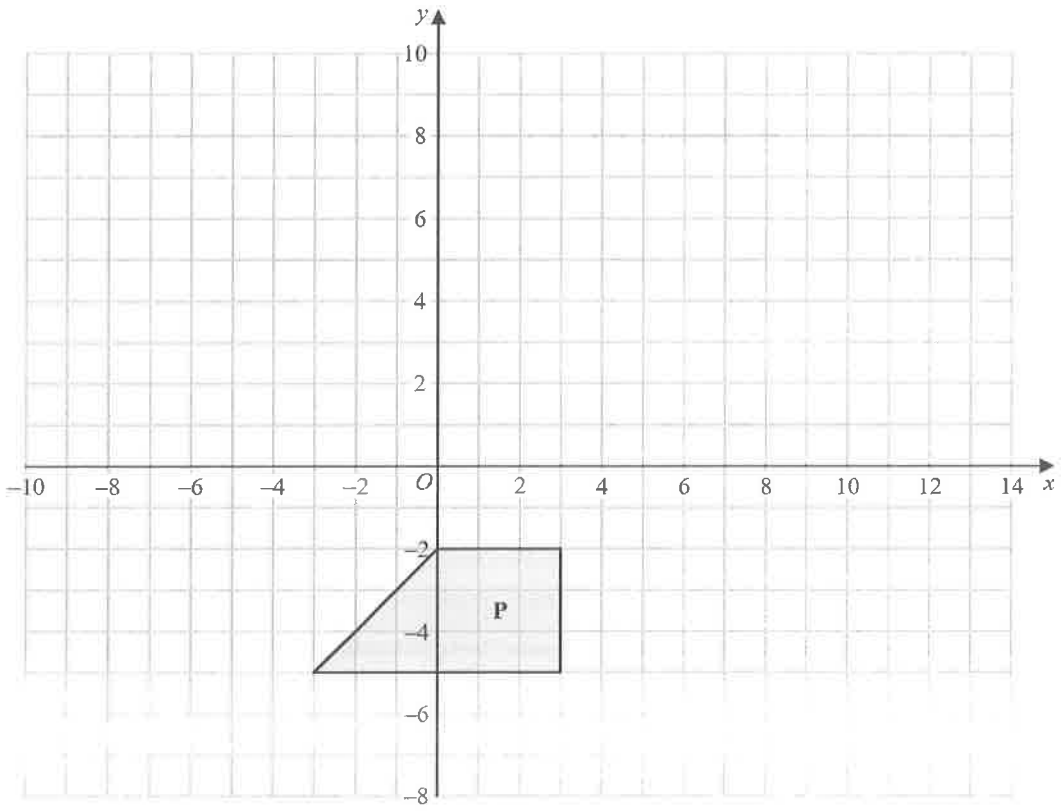
(d) Simplify $(3k^2)^4$

.....

(2)

(Total for Question 3 is 7 marks)

(4) Here is a shape **P** drawn on a grid of squares.



(*a*) On the grid, rotate shape **P** 180° about the point (–3, 2)

Label the new shape **Q**.

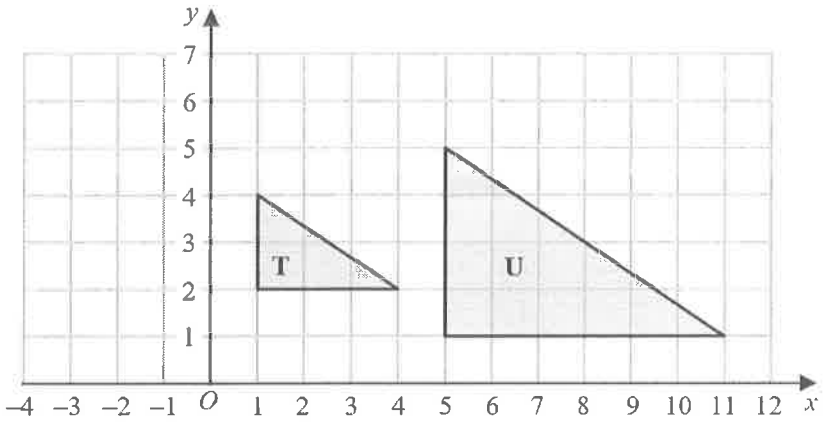
(2)

(*b*) On the grid, translate shape **P** by the vector $\begin{pmatrix} 10 \\ 8 \end{pmatrix}$

Label the new shape **R**.

(1)

Here are triangle **T** and triangle **U** drawn on a grid of squares.



(*c*) Describe fully the single transformation that maps triangle **T** onto triangle **U**.

.....

.....

(3)

(Total for Question 4 is 6 marks)

(5)

A circle centre O has radius 9 cm.

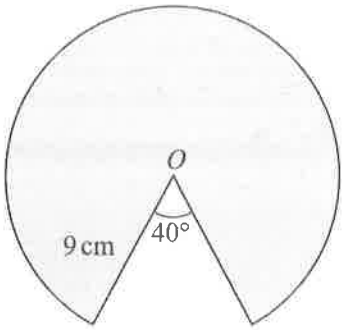


Diagram **NOT** accurately drawn

Calculate the perimeter of the shaded sector of the circle.

Give your answer correct to 3 significant figures.

..... cm

(Total for Question 5 is 4 marks)

(6)

The diagram shows a sector of a circle with radius 7 cm.

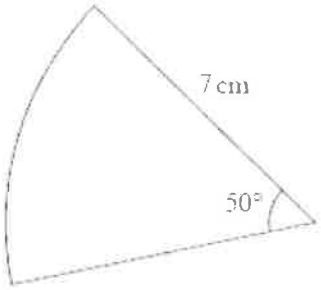


Diagram **NOT** accurately drawn

Work out the area of the sector.
Give your answer correct to one decimal place.

..... cm^2

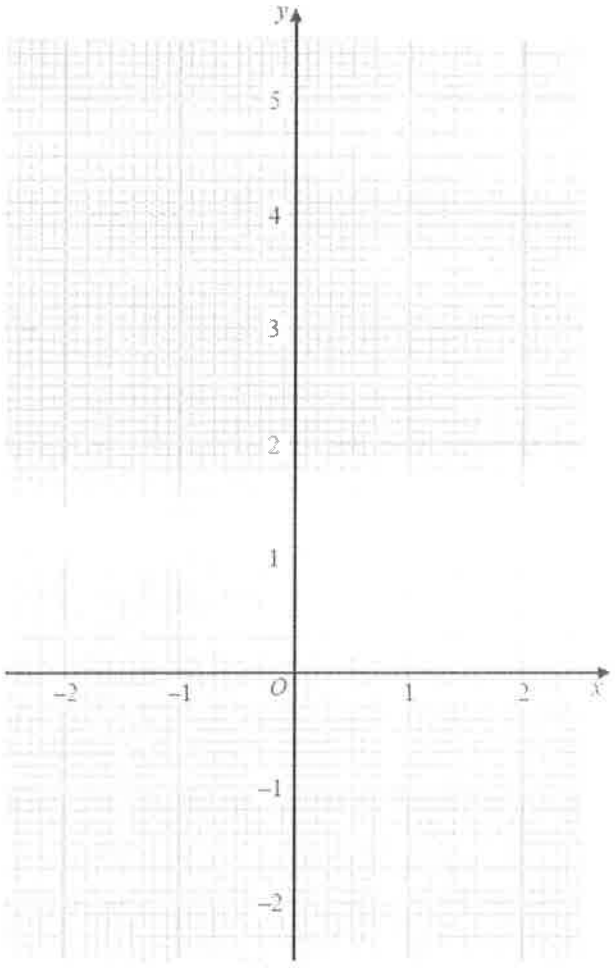
(Total for Question 6 is 2 marks)

(7) Complete the table of values for $y = x^3 - 3x + 2$

x	–2	–1	–0.5	0	1	1.5	2
y		4	3.4		0	0.9	

(2)

(*b*) On the grid, draw the graph of $y = x^3 - 3x + 2$ for values of x from –2 to 2

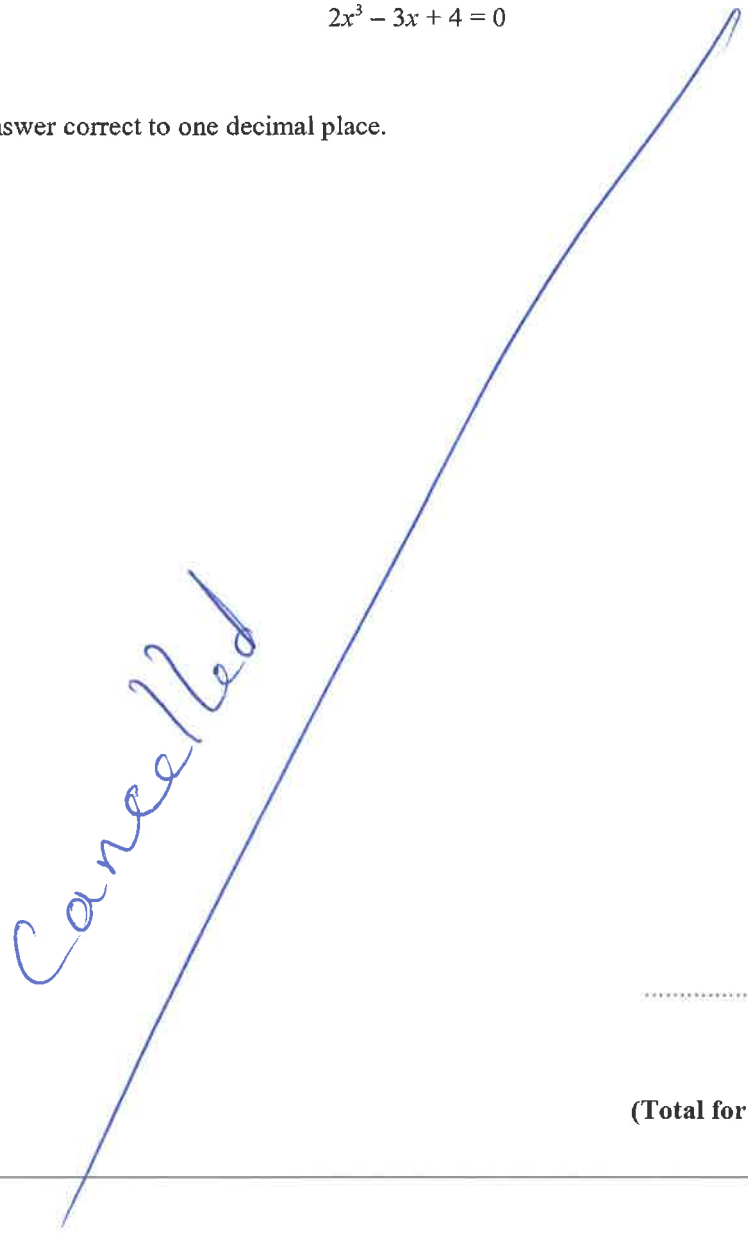


(2)

(*c*) By drawing a suitable straight line on the grid, use your graph to find an estimate for the solution of

$$2x^3 - 3x + 4 = 0$$

Give your answer correct to one decimal place.

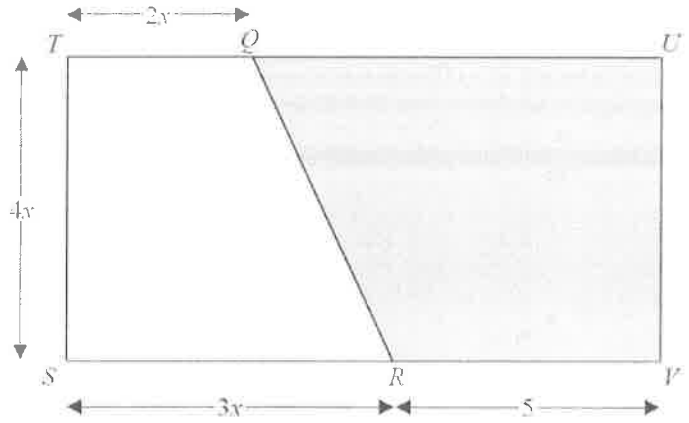


.....

(3)

(Total for Question 7 is 7 marks)

(8) The diagram shows rectangle $STUV$.
TQU and SRV are straight lines.
All measurements are in cm.



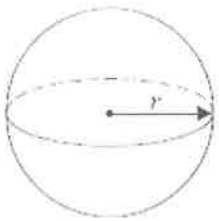
The area of trapezium $QUVR$ is A cm^2

Show that $A = 2x^2 + 20x$

(Total for Question 8 is 3 marks)

(9)

Here is a sphere.



Surface area of sphere = $4\pi r^2$

$\frac{3}{8}$ of the surface area of this sphere is 75π cm^2

Find the diameter of the sphere.

..... cm

(Total for Question 9 is 4 marks)

(10) Radio masts A and B are 120 km apart .

The bearing of radio mast B from mast A is 120^{o}.

The radio masts each transmit a signal over a distance of 80 km .

Draw an accurate scale drawing of the radio masts using a scale of 1cm to 20 km.

Shade the region which can receive signals from both radio masts.

(Total for Question 10 is 4 marks)

(Total for paper is 42 marks)

39

Answer ALL questions.

Write your answers in the space provided

You must write down all the stages in your working.

(1) A number, m, is rounded to 1 decimal place.
The result is 9.4

Complete the error interval for m.

1 1

9.35 $\leqslant m <$ 9.45

(Total for Question 1 is 2 marks)

(2) The straight line L_1 has equation $y = 3x - 4$
The straight line L_2 is perpendicular to L_1 and passes through the point (9, 5)

Find an equation of line L_2

$\text{grad}_{L_1} = 3$ 1

$\Rightarrow \text{grad}L_2 = -\frac{1}{3}$ 1

$y - 5 = -\frac{1}{3}(x - 9)$

$y - 5 = -\frac{x}{3} + 3$

$y = -\frac{x}{3} + 8$

or

$y = -\frac{1}{3}x + c$

$5 = -\frac{1}{3}(9) + c$

$c = 8$

1

$y = -\frac{x}{3} + 8$

(Total for Question 2 is 3 marks)

(3)

(a) Write down the value of 7^0

1

.....

(1)

(*b*) Factorise fully $8p^2 - 2p$

$2p(4p-1)$

.....

(2)

(*c*) Expand $4t(3t - 2)$

$12t^2 - 8t$

.....

(2)

(d) Simplify $(3k^2)^4$

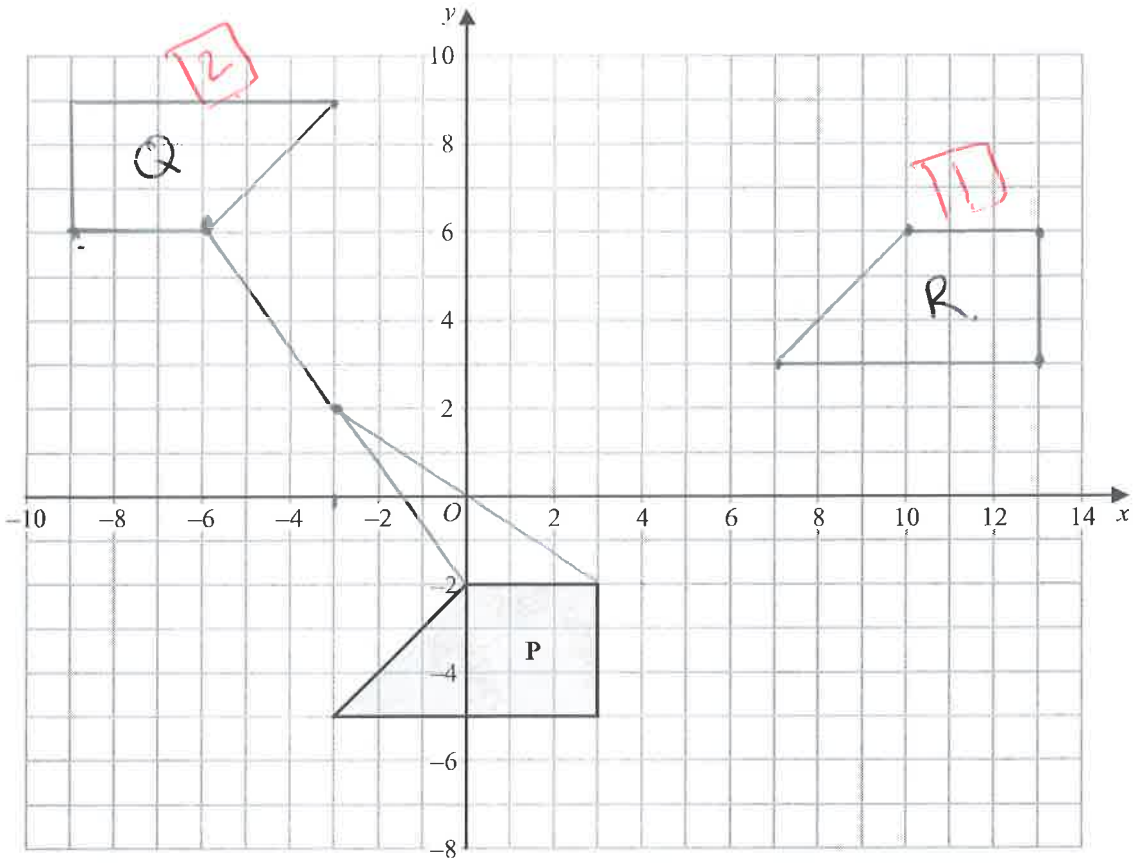
$3^4 k^8 = 81k^8$

.....

(2)

(Total for Question 3 is 7 marks)

(4) Here is a shape **P** drawn on a grid of squares.



(*a*) On the grid, rotate shape **P** 180° about the point (–3, 2)

Label the new shape **Q**.

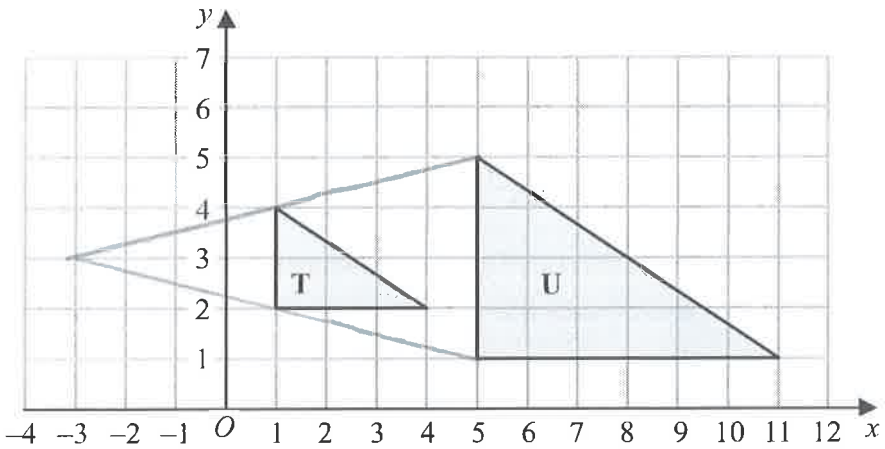
(2)

(*b*) On the grid, translate shape **P** by the vector $\begin{pmatrix} 10 \\ 8 \end{pmatrix}$

Label the new shape **R**.

(1)

Here are triangle **T** and triangle **U** drawn on a grid of squares.



(*c*) Describe fully the single transformation that maps triangle **T** onto triangle **U**.

11 Enlargement by scale factor of 2 11
and center (-3,3) 11

(3)

(Total for Question 4 is 6 marks)

(5)

A circle centre O has radius 9 cm.

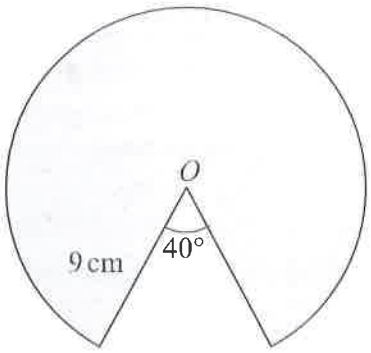


Diagram **NOT** accurately drawn

Calculate the perimeter of the shaded sector of the circle.

Give your answer correct to 3 significant figures.

$360 - 40 = 320$ [1]

$\frac{320}{360} \times 2\pi(9) = 16\pi$ [1] [1]

Perimeter $= 16\pi + 9 + 9$ [1]

..... cm

(Total for Question 5 is 4 marks)

(6)

The diagram shows a sector of a circle with radius 7 cm.

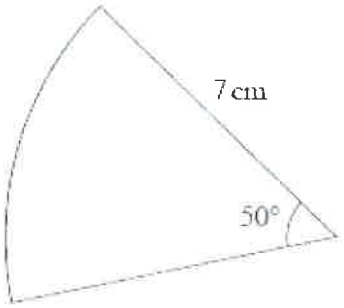


Diagram NOT accurately drawn

Work out the area of the sector.
Give your answer correct to one decimal place.

$\frac{50}{360}\pi(7)^2 = 21.38 = 21.4$

[1] [1]

..... cm^2

(Total for Question 6 is 2 marks)

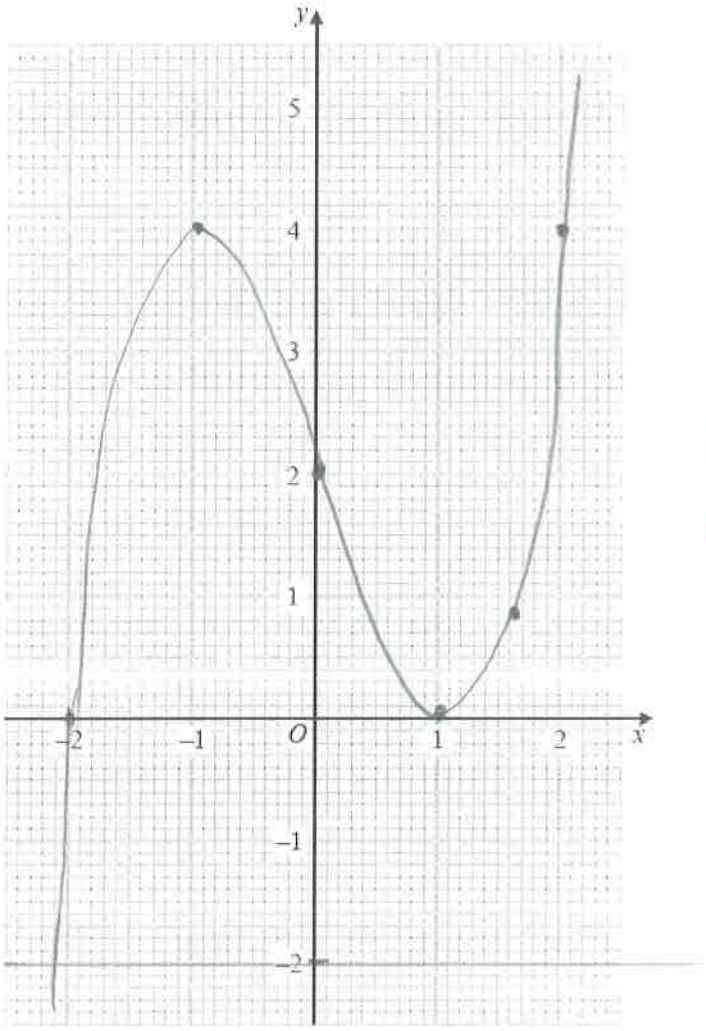
(7) Complete the table of values for $y = x^3 - 3x + 2$

any mistake −1

x	−2	−1	−0.5	0	1	1.5	2
y	0	4	3.4	2	0	0.9	4

(2)

(*b*) On the grid, draw the graph of $y = x^3 - 3x + 2$ for values of x from −2 to 2



6 pts
3 pts each 1

(2)

(c) By drawing a suitable straight line on the grid, use your graph to find an estimate for the solution of

$$2x^3 - 3x + 4 = 0$$

Give your answer correct to one decimal place.

$2x^3 - 3x + 2 = -2$ [1]

$y = y$

$y = -2$ [1]

$x = -2.1$ [1]

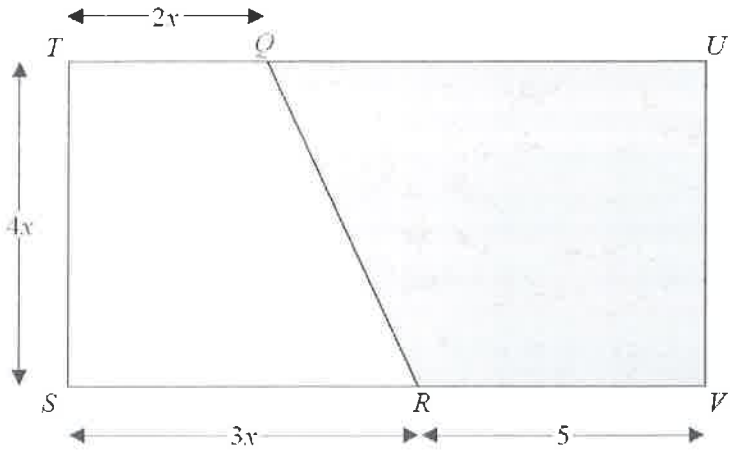
Cancelled

.....

(3)

(Total for Question 7 is 7 marks)

(8) The diagram shows rectangle $STUV$.
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The area of trapezium $QUVR$ is A cm^2

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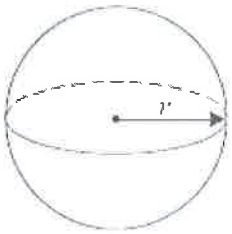
$A = \frac{1}{2}(4x)((5)+(x+5))$ [1] [1]

$= 2x(x+10) = 2x^2 + 20x$ [1]

(Total for Question 8 is 3 marks)

(9)

Here is a sphere.



Surface area of sphere $= 4\pi r^2$

$\frac{3}{8}$ of the surface area of this sphere is 75π cm^2

Find the diameter of the sphere.

$\frac{3}{8}(4\pi r^2) = 75\pi$

$r^2 = 50$

$r = 5\sqrt{2}$

diameter $= 2(5\sqrt{2}) = 10\sqrt{2} = 14.14$

..... cm

(Total for Question 9 is 4 marks)

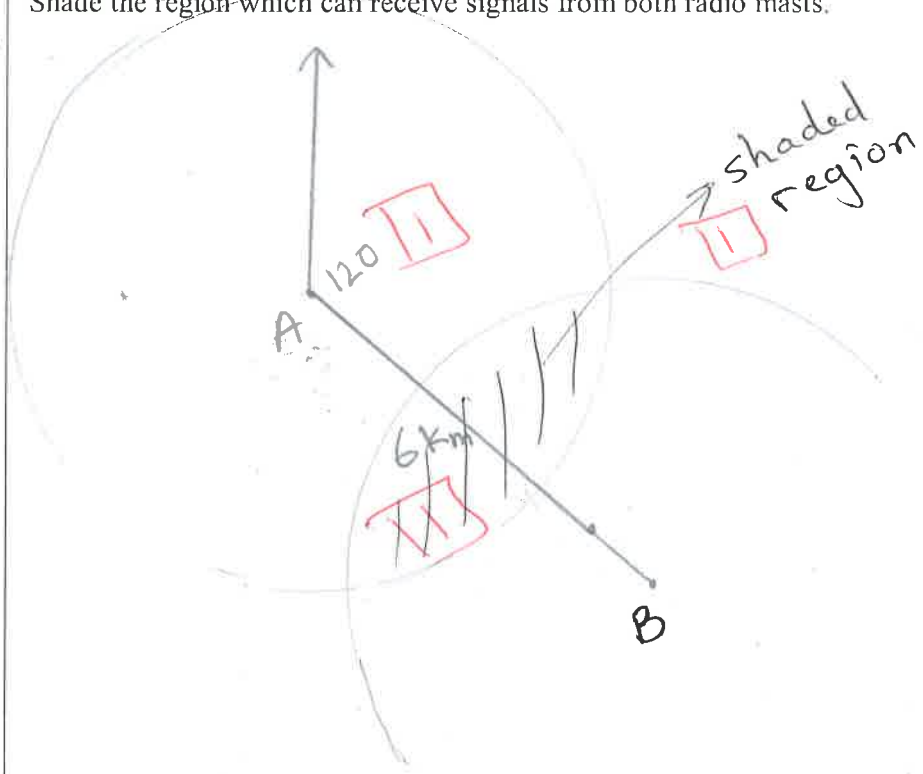
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Shade the region which can receive signals from both radio masts.



(Total for Question 10 is 4 marks)

(Total for paper is ~~42~~ marks) 39

locus of A is a Circle with center A
signal radius = 4

signal B is a Circle with center B
radius = 4