




JustMaths

Countdown to your final Maths exam ...
Part 7 (2019)

"WORKING ABOVE"

	Marks	Actual	  
Q1. Area of a triangle and interpret answer	5		
Q2. Area of regular pentagon	4		
Q3. Area of a triangle/ Cosine rule	5		
Q4. Angle between line and plane	5		
Q5. Use cosine rule and area pf a triangle	5		
Q6. Trigonometric graphs	5		
Q7. Percentages & trigonometry	3		
Q8. Cosine graphs	4		
Q9. Geometric proof	4		
Q10. Area of a triangle	3		
Q11. Cosine rule	5		
Q12. Sine rule	3		
Q13. Trigonometric graphs	2		
Q14. Prove given value of cosine of an angle	5		

Q1. In triangle RPQ , $RP = 8.7$ cm $PQ = 5.2$ cm Angle $PRQ = 32^\circ$

(a) Assuming that angle PQR is an acute angle, calculate the area of triangle RPQ .
Give your answer correct to 3 significant figures.



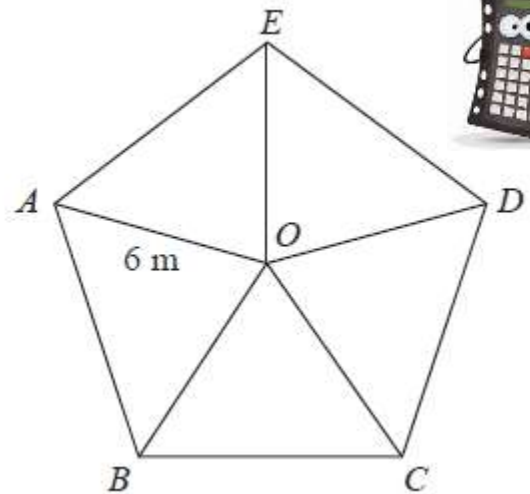
(4)

(b) If you did not know that angle PQR is an acute angle, what effect would this have on your calculation of the area of triangle RPQ ?

Q2. The diagram shows a regular pentagon $ABCDE$.

The pentagon is divided into 5 isosceles triangles.
 $OA = OB = OC = OD = OE = 6$ m

Work out the area of the pentagon. Give your answer correct to 1 decimal place.

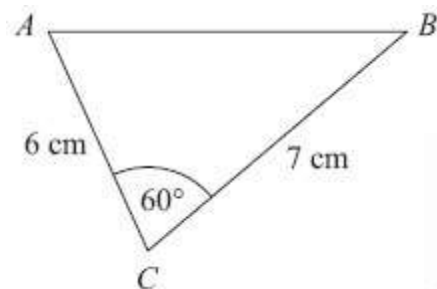


(7)

(4)

Q3. ABC is a triangle.

(a) Work out the area of triangle ABC .
Give your answer correct to 3 significant figures.



(2)

(b) Work out the length of the side AB . Give your answer correct to 3 significant figures.

(3)

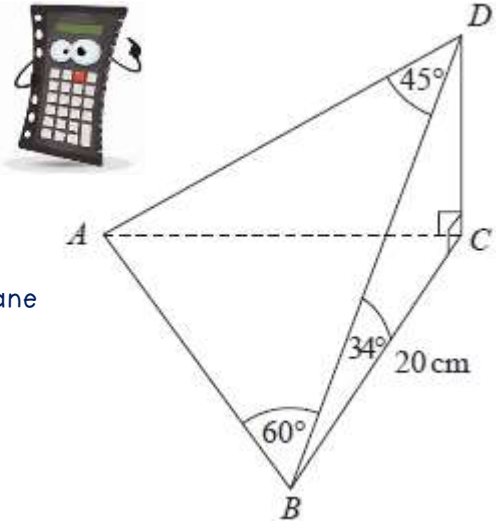
Q4. The diagram shows a pyramid with base ABC .

CD is perpendicular to both CA and CB .

Angle $CBD = 34^\circ$ Angle $ADB = 45^\circ$ Angle $DBA = 60^\circ$

$BC = 20$ cm.

Calculate the size of the angle between the line AD and the plane ABC . Give your answer correct to 1 decimal place.



(5)

Q5. ABC is a triangle.

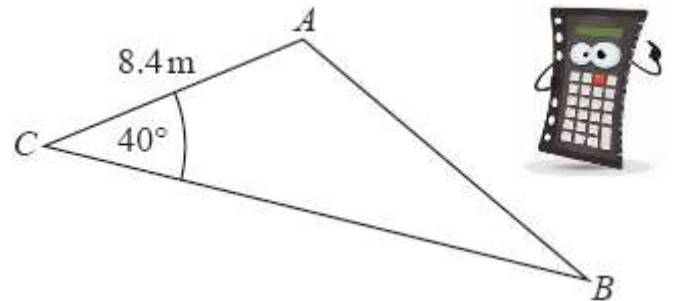
$AC = 8.4$ m

Angle $ACB = 40^\circ$

The area of the triangle = 100m^2 .

Work out the length of AB .

Give your answer correct to 3 significant figures. You must show all your working.



(5)

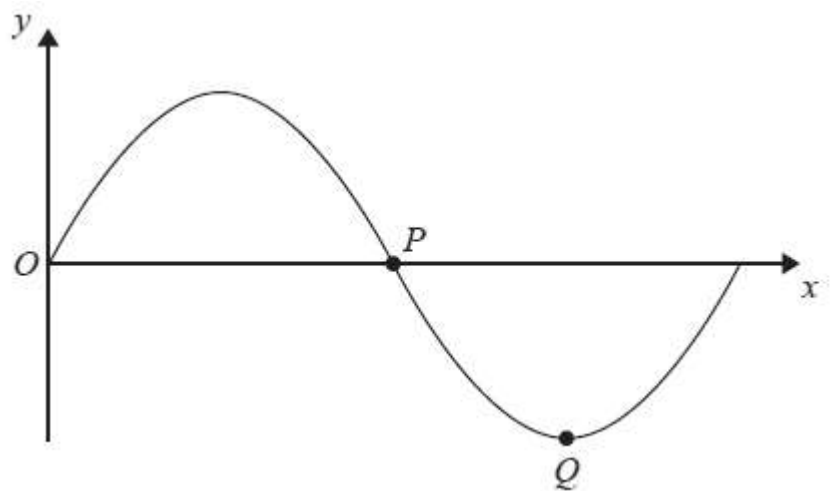
Q6. The diagram shows part of a sketch of the curve $y = \sin x^\circ$.

(a) Write down the coordinates of the point P .

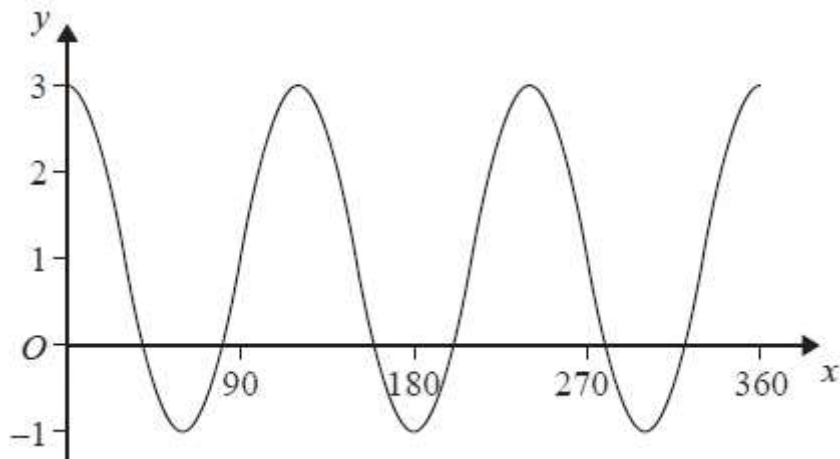
(1)

(b) Write down the coordinates of the point Q .

(1)



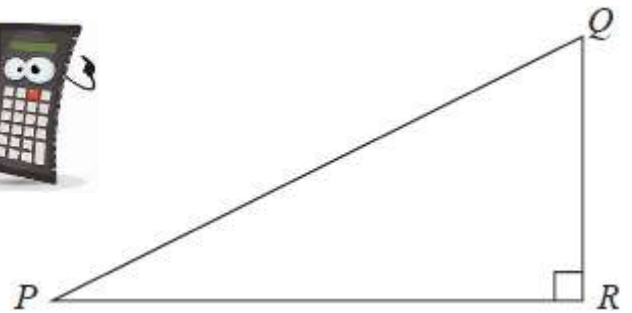
Here is a sketch of the curve $y = a \cos bx^\circ + c$, $0 \leq x \leq 360$



(c) Find the values of a , b and c .

$a = \dots\dots\dots$
 $b = \dots\dots\dots$
 $c = \dots\dots\dots$ (3)

Q7. Here is triangle PQR .



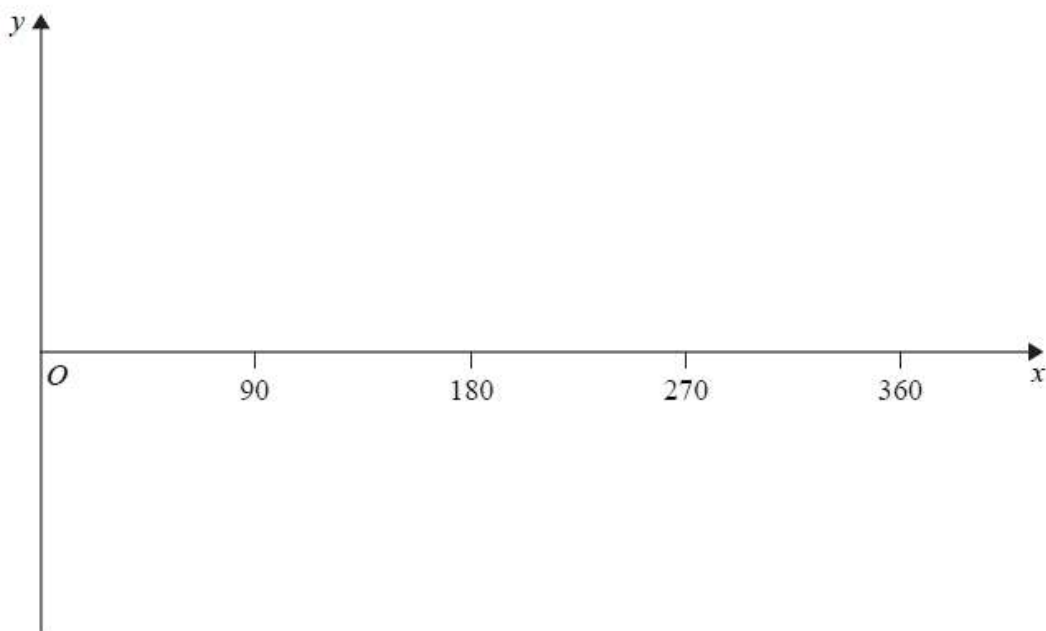
The length of QR is 60% of the length of PR .

Find the value of $\sin QPR$.

Give your answer correct to 3 significant figures.

(3)

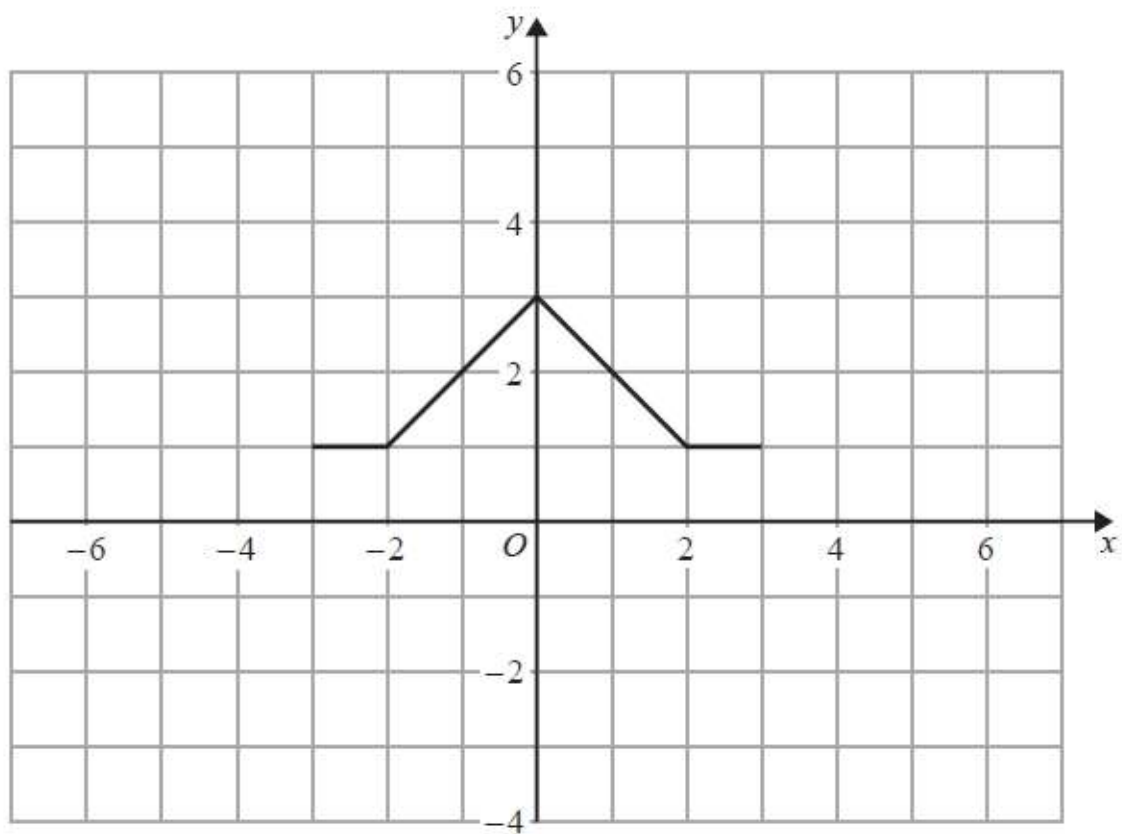
Q8. (a) Sketch the graph of $y = \cos x^\circ$ for $0 \leq x \leq 360$



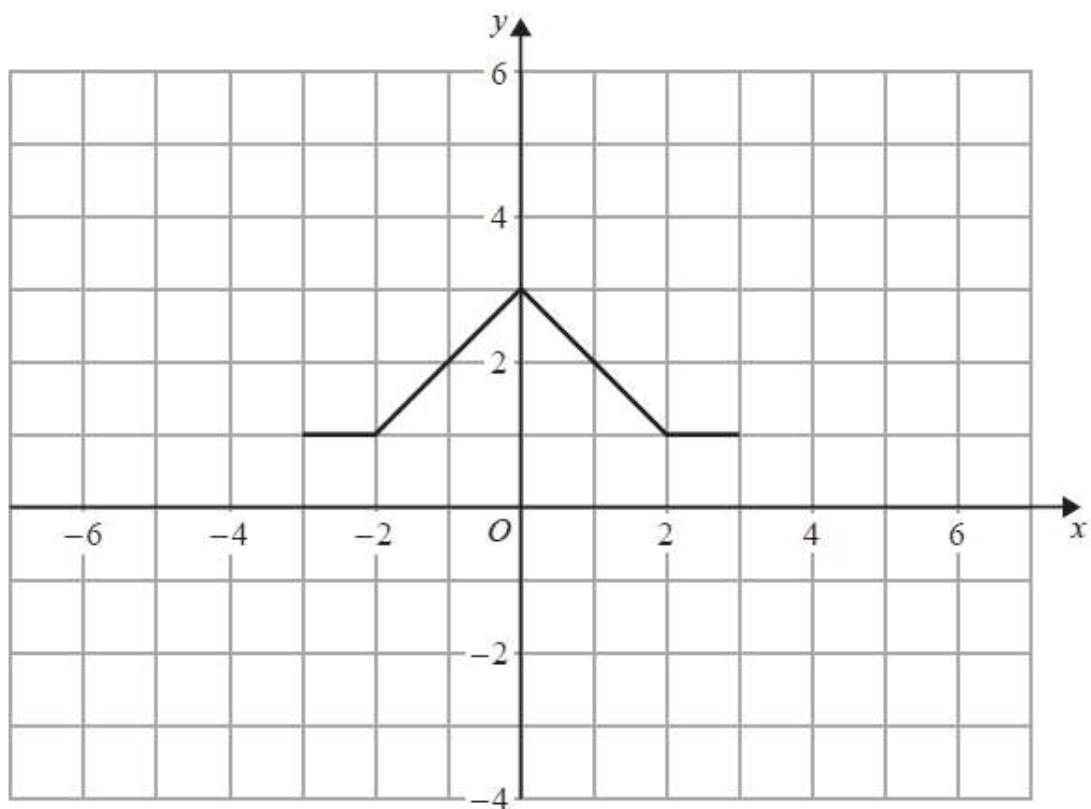
(2)

(b) The graph of $y = f(x)$ is shown on both grids below.

(i) On this grid, draw the graph of $y = 2f(x)$



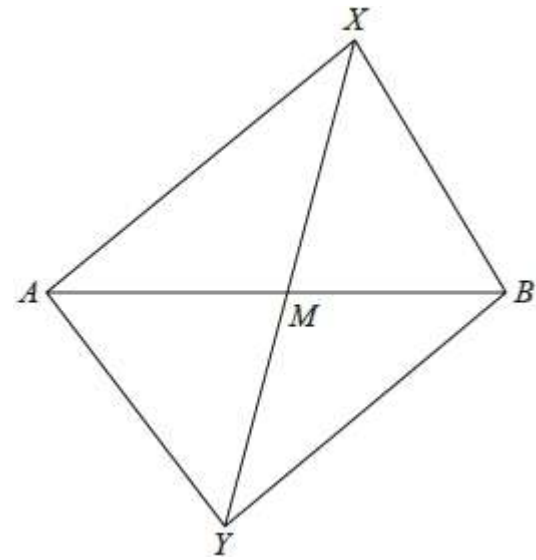
(ii) On the grid below, draw the graph of $y = f(x - 3)$



Q9. The diagram shows a quadrilateral $XYBA$.

The diagonals AB and XY intersect at the point M .

Given that the area of triangle AXB is equal to the area of triangle AYB ,
prove that XY is bisected by AB .



(4)

Q10. The diagram shows the triangle PQR .

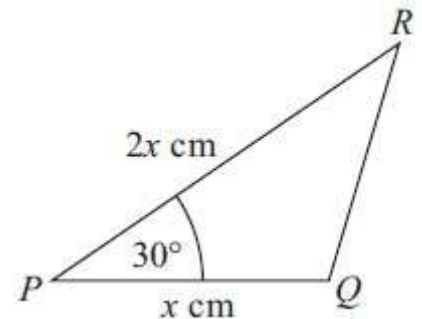
$$PQ = x \text{ cm}$$

$$PR = 2x \text{ cm}$$

$$\text{Angle } QPR = 30^\circ$$

The area of triangle $PQR = A \text{ cm}^2$

Show that $x = \sqrt{2A}$

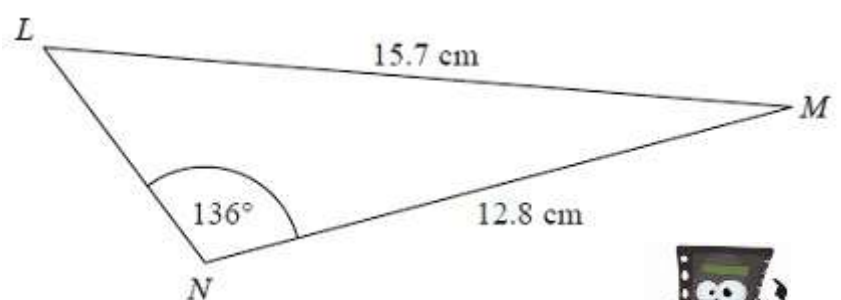


(3)

Q11. The diagram shows triangle LMN .

Calculate the length of LN .

Give your answer correct to 3 significant figures.



(5)

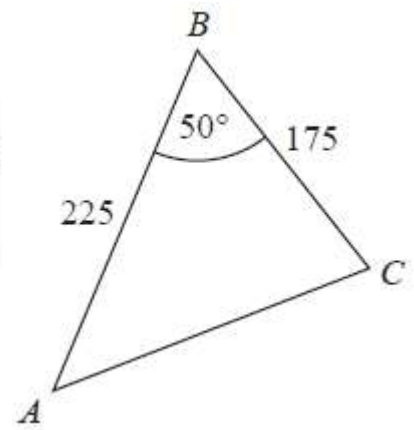
Q12. Jerry wants to cover a triangular field, ABC , with fertiliser.

Here are the measurements Jerry makes

angle $ABC = 50^\circ$ correct to the nearest degree,

$BA = 225$ m correct to the nearest 5 m,

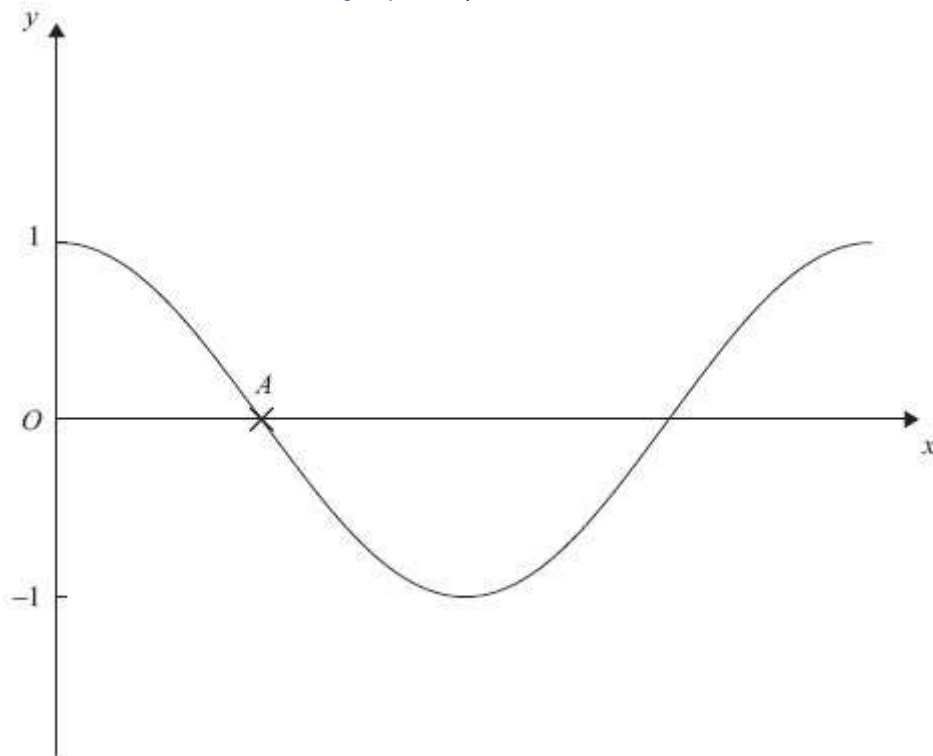
$BC = 175$ m correct to the nearest 5 m.



Work out the upper bound for the area of the field.
You must show your working.

(3)

Q13. The diagram shows a sketch of the graph of $y = \cos x^\circ$



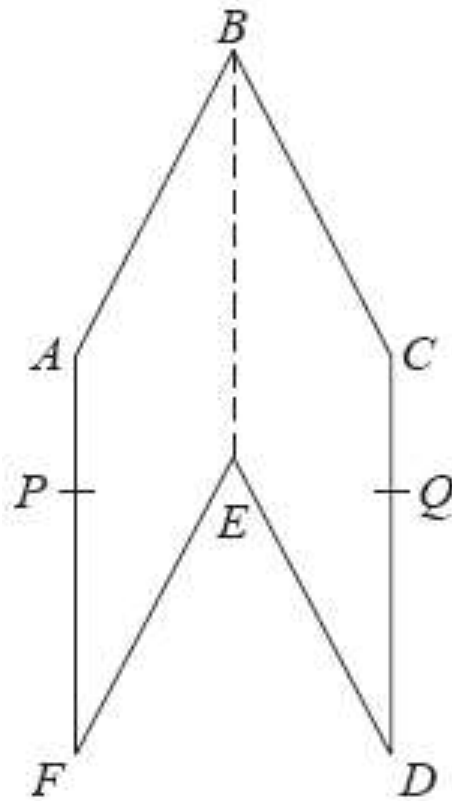
(a) Write down the coordinates of the point A .

(1)

(b) On the same diagram, draw a sketch of the graph of $y = 2 \cos x^\circ$

(1)

Q14. The diagram shows a hexagon $ABCDEF$.



$ABEF$ and $CBED$ are congruent parallelograms where $AB = BC = x$ cm.
 P is the point on AF and Q is the point on CD such that $BP = BQ = 10$ cm.

Given that angle $ABC = 30^\circ$,

prove that $\cos PBQ = 1 - \frac{(2 - \sqrt{3})}{200} x^2$

(5)