

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2006 question paper

0580 and 0581 MATHEMATICS

0580/03 and 0581/03 Paper 3, maximum raw mark 104

These mark schemes are published as an aid to teachers and students, to indicate the requirements of the examination. They show the basis on which Examiners were initially instructed to award marks. They do not indicate the details of the discussions that took place at an Examiners' meeting before marking began. Any substantial changes to the mark scheme that arose from these discussions will be recorded in the published *Report on the Examination*.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes must be read in conjunction with the question papers and the *Report on the Examination*.

The minimum marks in these components needed for various grades were previously published with these mark schemes, but are now instead included in the *Report on the Examination* for this session.

- CIE will not enter into discussion or correspondence in connection with these mark schemes.

CIE is publishing the mark schemes for the May/June 2006 question papers for most IGCSE and GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.



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| Question | Answer | Marks | Comments | |
|-----------|--------------------|-------|---|----|
| 1 (a)(i) | translation | 1 | must be a single transformation not translocation etc | |
| | (-7) | 1 | accept in words 7 left | |
| | (-4) | 1 | accept in words 4 down | |
| 1 (a)(ii) | enlargement | 1 | must be a single transformation | |
| | S.F = 3 | 1 | | |
| | centre (0,0) | 1 | | |
| 1 (b) | correct rotation | 2 | SC1 for any rotation of 90 anticlockwise or SC1 for correct rotation of 90 clockwise | |
| 1 (c) | correct reflection | 2 | SC 1 for any reflection in $y=k$ or SC 1 for correct reflection in $x=-2$ | |
| | | | | 10 |
| 2 (a) | 141 cao | 2 | M1 for $\pi \times 1.5^2 \times 20$ (imp.by 141.3.....) | |
| 2 (b) | 2 h 56 or 2 h 57 | 3 | SC 2 for 176 to 177 mins M1 for (a) / 0.8 SC 1 for ft time in mins correctly changed to hours and minutes. (if more than 1 hour) | |
| 2 (c) | 36 cao | 2 | M1 for 12 seen as length of box | |
| 2 (d)(i) | 8.6(0) cao | 2 | M1 for $96 \times 0.35 - 25$ or $96 \times 35 - 2500$ | |
| 2 (d)(ii) | 34.4 or 34 | 3ft | ft is (d)(i) $\times 4$ M1 for (d)(i) / 25 M1 (dep) for $\times 100$ | |
| | | | | 12 |

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|------------|-------------------|-----|---|----|
| 3 (a) | $4p - 3q$ | 2 | SC1 for either $4p$ or $-3q$ seen | |
| 3 (b) | 7 cao | 3 | M1 for $2x - 5 = 9$ or $6x - 15 = 27$ M1 for $2x = 14$ or $6x = 42$ | |
| 3 (c)(i) | $2j + 2k$ | 1 | or $2(j + k)$ or $j + j + k + k$ | |
| 3 (c)(ii) | (c)(i) = 72 | 1ft | | |
| 3 (c)(iii) | 24 cao | 2 | M1 for substitution of $k=2j$ or $j=k/2$ implied by $6j=72$, $3j=36$, ans of 12, $3k=72$ | |
| 3 (d) | numerator = $1/6$ | B1 | | |
| | $\times 2$ | M1 | or dividing by $3/6$ | |
| | $1/3$. | A1 | SC1 for ans of $1/3$ without working | |
| 3 (d)(ii) | $wr + t$ | 2 | M1 for $wr = s - t$ | |
| | | | | 14 |
| 4 (a) | 16, 21, 26 | 3 | 1, 1, 1 | |
| 4 (b) | 101 | 2 | M1 for $5 \times 20 + 1$ sol. | |
| 4 (c) | $5n + 1$ | 2 | SC1 for $5n + k$ seen | |
| 4 (d) | 37 | 2 | M1 for -1 then $/5$ or SC1 ft from (c) = 186 correctly solved. | 9 |

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| | | | | |
|------------|--|--------|---|----|
| 5 (a) | 200 | 2 | M1 for distance / time | |
| 5 (b)(i) | 2 squares hori. parallel line to 470 | 1 1 | indep. | |
| 5 (b)(ii) | 09 33 | 1ft | correct time or ft from graph (b)(i) allow + or - 3 mins | |
| 5 (c)(i) | start at (0730 , 470) end at (0945 , 0) | 1 1 | but must be a straight line | |
| 5 (c)(ii) | 280 | 1ft | ft from graph allow + or - 5 km. | |
| 5 (c)(iii) | 208 to 209 | 2 | M1 for distance / time | 10 |
| 6 (a)(i) | 163.4 or 163 | 2 | M1 for sum of heights / 10 | |
| 6 (a)(ii) | 24 | 2 | SC1 for both 178 and 154 seen | |
| 6 (b)(i) | 7 points plotted | P2 | P1 for 5 or 6 correct | |
| 6 (b)(ii) | line of best fit | L1 | judge by eye | |
| 6 (b)(iii) | height for 21cm | 1 | ft from their line of best fit | |
| 6 (b)(iv) | positive | 1 | | |
| 6 (b)(v) | correct statement | 1 | larger hand span greater height or equiv. | 10 |

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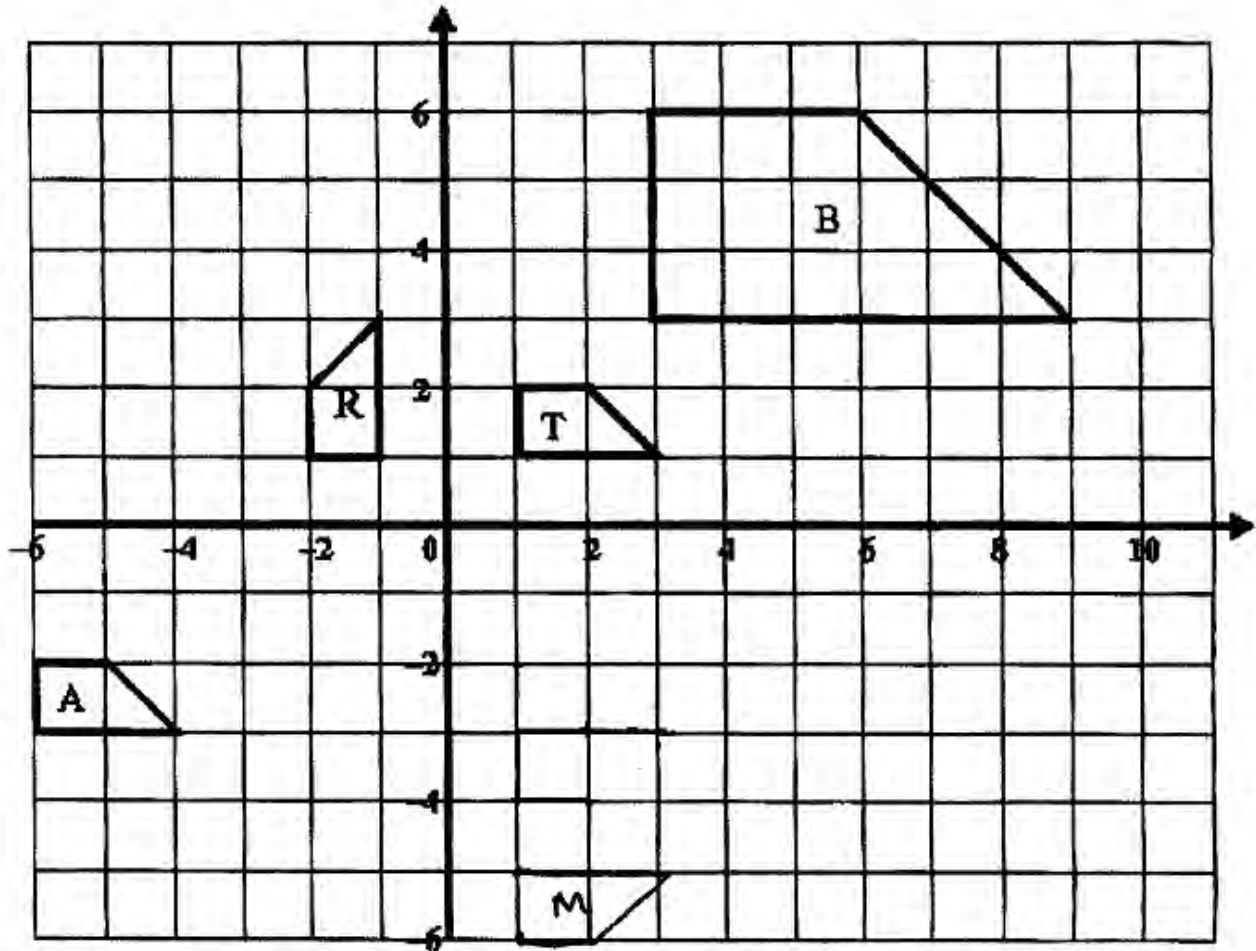
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|------------|--------------------|-------|--|----|
| 7 (a) | m | 1 | | |
| 7 (b) | $y = 2x + 5$ | 2 | SC1 for 2x or 5 seen | |
| 7 (c) | 8, 12, 3 | 3 | 1, 1, 1 | |
| 7 (d) | 9 points plotted | P2 ft | P1ft for 6,7 or 8 correct limit for accuracy is 1/2 small square | |
| | smooth curve drawn | C1 | reasonable curve through the 9 correct points not dependent on P2 | |
| 7 (e) | (-3.8 , -2.7) | 1ft | allow + or - 0.1 ft is from their graph | |
| | (1.8 , 8.7) | 1ft | allow + or - 0.1 ft is from their graph | |
| | | | | 11 |
| 8 (a)(i) | pentagon | 1 | | |
| 8 (a)(ii) | 72 | 2 | M1 for 360 / 5 | |
| 8 (a)(iii) | 108 | 2ft | M1 ft for 180 - (a)(ii) | |
| 8 (b) | (x=) 35 | 1 | | |
| | (y=) 64 | 2 | | |
| | (z=) 81 | 2 | M1 for 180 - (35 + 64) oe. sol | |
| | | | | 10 |

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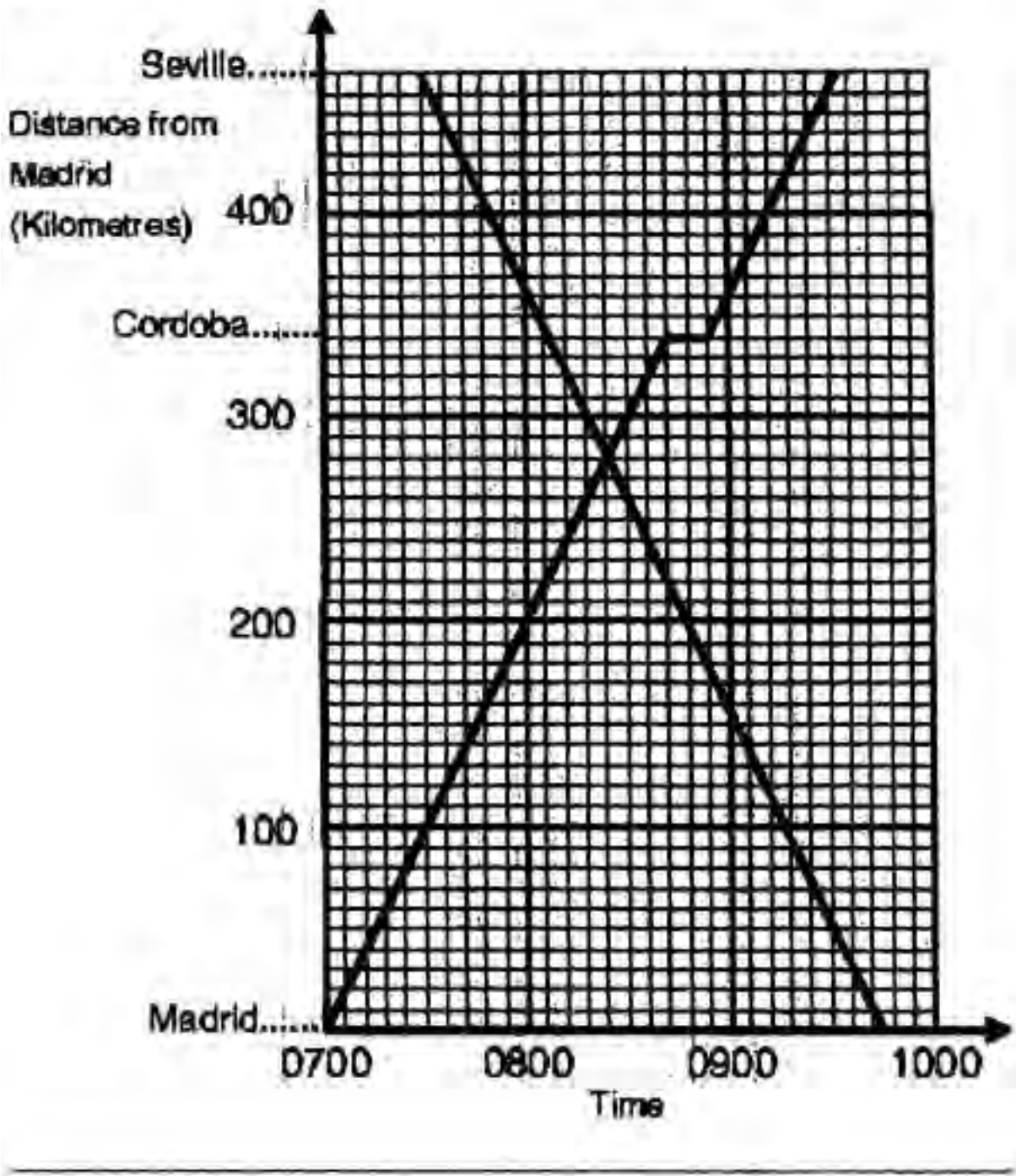
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|-----------|---------------------------------|-----|--|-----|
| 9 (a)(i) | 85 | 1 | allow + or - 1 | |
| 9 (a)(ii) | 72 | 1 | allow + or - 2 | |
| 9 (b)(i) | angle bisector constructed | 2 | must have correct arcs seen SC1 for any line from A to BC | |
| 9 (b)(ii) | 82 to 84 | 1ft | ft is length (+/- 1) from line in (b)(i) | |
| 9 (c) | perpendicular bisector of AC | 2 | must have correct arcs seen allow +/- 0.1 and +/- 2 degrees SC1 if inaccurate or correct by eye without construction lines seen | |
| 9 (d) | G | 2ft | G placed anywhere in the correct region ft only from 2 lines creating a distinct region | 9 |
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| | | | | |
| 10 (a) | p=40 , q=50 | 1 | may be seen on the diagram | |
| 10 (b) | 37.4 | 2 | M1 for $\tan ACB = 13/17$ oe or better | |
| 10 (c) | 21.4 | 2 | M1 for $\sqrt{(13^2+17^2)}$, $\sqrt{169+289}$, $\sqrt{458}$ | |
| 10 (d) | 110.5 | 2 | allow 110 or 111 M1 for $0.5 \times 13 \times 17$ | |
| 10 (e) | 272 to 273 | 2ft | ft is $310 - (b)$ M1 for $360 - (50 + (b))$ oe | 9 |
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| | | | | |
| | | | | 104 |

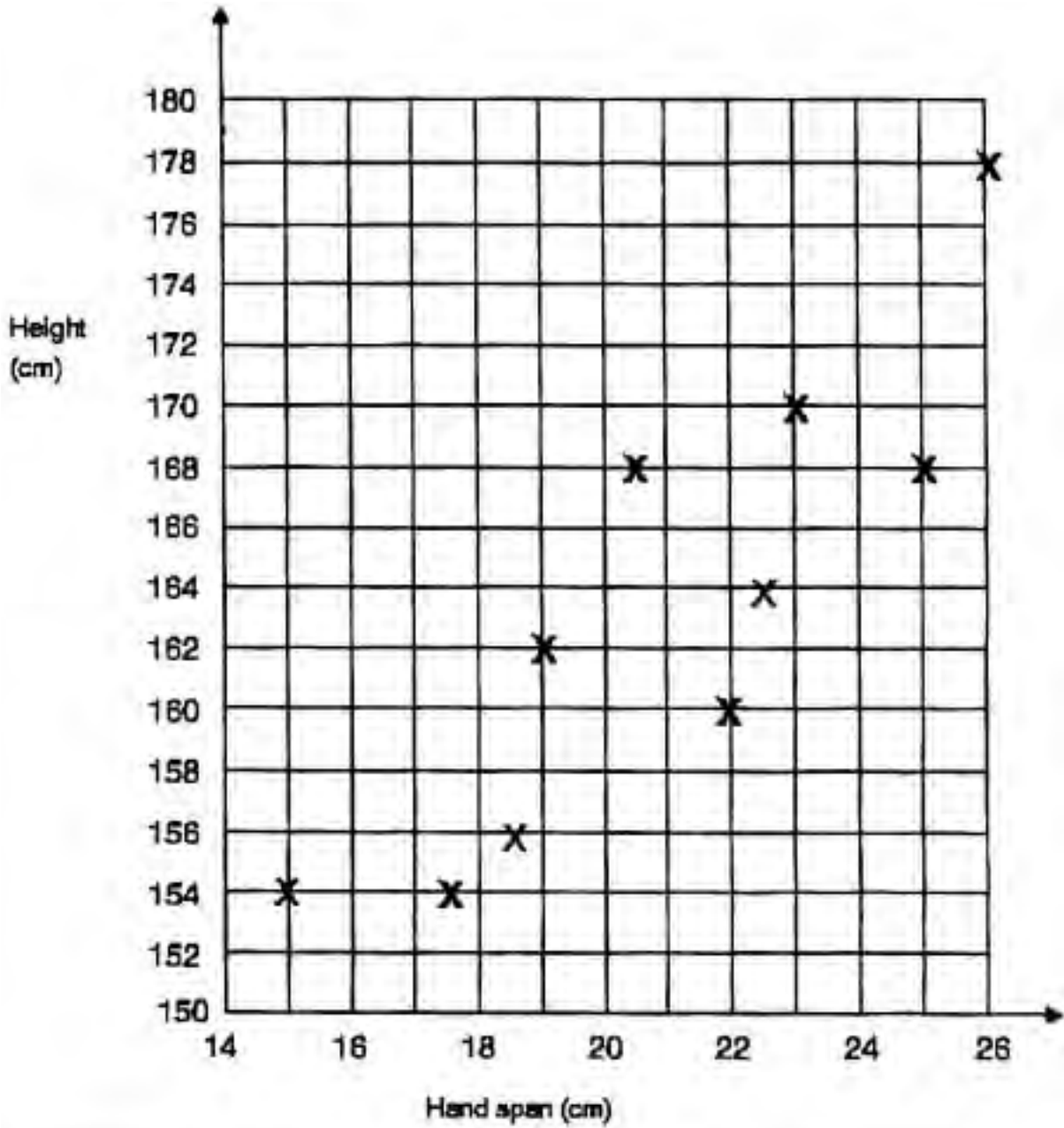
Diagram Solutions

Question 1

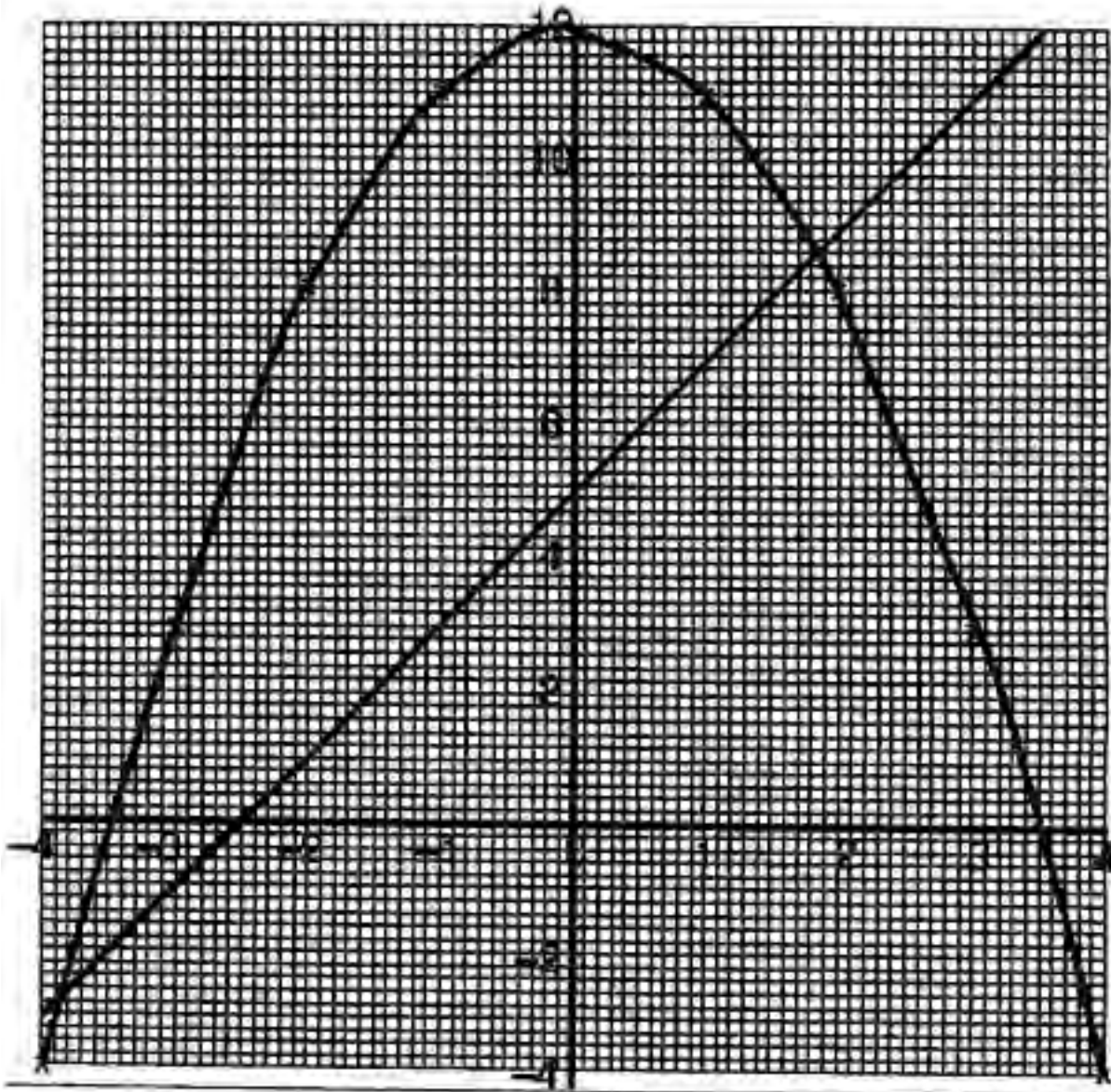


Question 5





Question 7



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Question 9

