1.18 Pure: Trigonometric Graphs: 10-minute Pack

EDEXCEL 9MA0 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 This question concerns the graph of $y = \cos(x)$ for $0 \text{ degrees} \leq x \leq 360 \text{ degrees}$.

(a) State the period and the range of $y = \cos(x)$. **(2)**

(b) Write down the coordinates of the maximum point(s) and the minimum point of $y = \cos(x)$ for $0 \text{ degrees} \leq x \leq 360 \text{ degrees}$. **(2)**

(c) State the x-intercepts of $y = \cos(x)$ for $0 \text{ degrees} \leq x \leq 360 \text{ degrees}$. **(2)**

(d) Given that $\cos(x) = \sin(x + 90)$, describe fully the single transformation that maps the graph of $y = \sin(x)$ onto the graph of $y = \cos(x)$. **(2)**

(Total for Question 1 is 8 marks)

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Mark scheme · 1.18 Pure: Trigonometric Graphs: 10-minute Pack

Question 1

(a) period = 360 degrees **B1**

(a) range -1 ≤ y ≤ 1 oe **B1**

(a) Answer: Period 360 degrees; range -1 ≤ y ≤ 1

(b) maximum points (0, 1) and (360, 1), both stated **B1**

(b) minimum point (180, -1) **B1**

(b) Answer: Maxima (0, 1) and (360, 1); minimum (180, -1)

(c) one of x = 90, 270 correctly identified **B1**

(c) both values x = 90, 270 cao, no extra values **B1**

(c) Answer: x = 90, 270

(d) recognises that y = sin(x + 90) is a horizontal translation of y = sin(x) by (-90, 0) **M1**

(d) correctly states: translation by the vector (-90, 0), i.e. 90 degrees in the negative x-direction, cao **A1**

(d) Answer: Translation by the vector (-90, 0) (a shift of 90 degrees to the left)

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