Additional Math with Ali Hashir

Graphs of Trigonometric Functions

Worksheet 2 — Answers

Q1. (a) amplitude 5, period 360°. (b) amplitude 2, period 90°. (c) amplitude 3, period 720°.

Q2. Crosses the x-axis at $x = 0°, 180°, 360°$; range $-1 \leqslant y \leqslant 1$.

Q3. Maximum $y = 1$ at $(0°, 1)$; minimum $y = -3$ at $x = 180°$; crosses the x-axis at $x = 60°, 300°$.

Q4. Asymptote at $x = 180°$.

Q5. $a = 4$, $b = 4$.

Q6. Range $-2 \leqslant y \leqslant 4$.

Q7. Crosses the y-axis at $(0, 1)$; crosses the x-axis at $x = \dfrac{\pi}{2}, \dfrac{3\pi}{2}$; period 2π.

Q8. $x = 45°,\ 225°$ (2 solutions).

Q9. $x = 15°,\ 75°,\ 195°,\ 255°$.

Q10. $x = 60°,\ 120°,\ 240°,\ 300°$.

Q11. Range $0 \leqslant y \leqslant 1$; touches the x-axis at $x = 0°, 180°, 360°$ (3 points).

Q12. Asymptotes at $x = 90°, 270°$; the branches on $(90°, 180°)$ and $(270°, 360°)$ are reflected above the x-axis, so the curve never goes negative and touches $y = 0$ only at $x = 0°, 180°, 360°$.

Challenge 1. $a = 4$, $b = 3$, $c = 3$.

Challenge 2. 2 solutions.

Challenge 3. $x = 0°,\ 90°,\ 180°,\ 360°$.