JRA Tutors
Private tuition and small online Study Pods

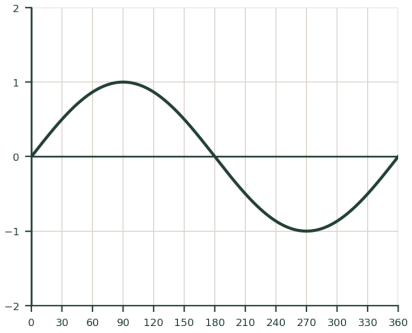
Trigonometric and Exponential Graphs

Grade 7 topic · Higher tier · Edexcel and AQA

How to use this pack
20 questions that get harder as you go. Questions 1–15 (42 marks) build up to the harder Grade 8–9 style questions at the end; aim to complete all 20. Show your working on the lines and write your final answer on the answer line, then mark yourself with the answers at the back. Diagrams are not drawn accurately. Total: 61 marks.

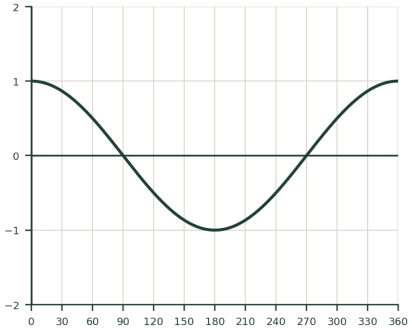
Warm-up

1 The graph shows $y = \sin x$ for $0° \le x \le 360°$. Write down the maximum value of y and the value of x where it occurs. **[3 marks]**



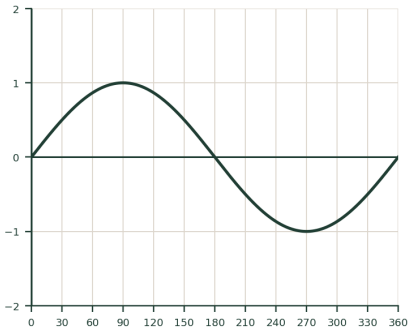
Answer _____

2 The graph shows y = cos x. Write down the coordinates of the point where it crosses the y-axis. **[2 marks]**



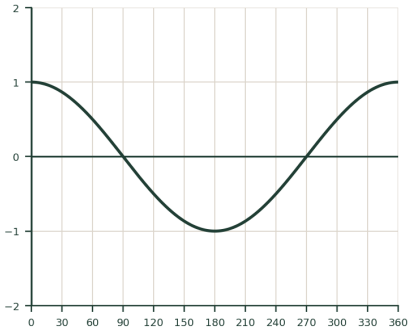
Answer _____

3 Write down the values of x between 0° and 360° where sin x = 0. **[3 marks]**



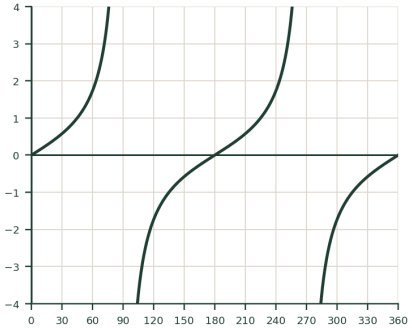
Answer _____

4 State the period of the graph y = cos x. **[2 marks]**



Answer _____

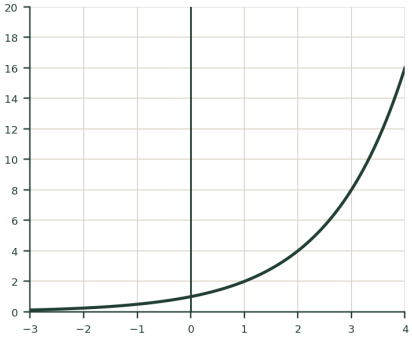
5 Write down the asymptotes of y = tan x for 0° ≤ x ≤ 360°. **[3 marks]**



Answer _____

Core

6 The graph of y = 2^x is drawn. Write down the coordinates of the point where it crosses the y-axis. **[3 marks]**

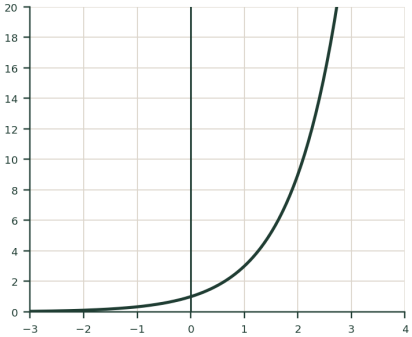


Answer _____

7 Work out y when x = 3 for y = 4^x. **[2 marks]**

Answer _____

8 State whether y = 3^x is increasing or decreasing and write down its asymptote. **[3 marks]**



Answer _____

9 Work out y when x = −2 for y = 2^x. **[3 marks]**

Answer _____

10 Does the graph of y = 3^x ever go below the x-axis? Explain. **[2 marks]**

Answer _____

Stretch

11 Work out the value of $y = 4 \sin x$ when $x = 30°$. **[3 marks]**

Answer _____

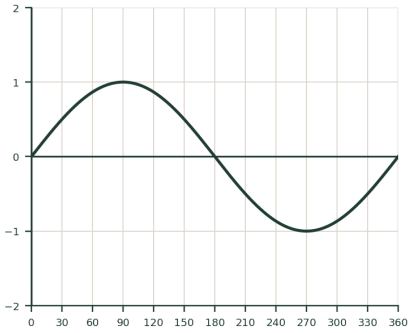
12 State the amplitude of $y = 4 \sin x$. **[2 marks]**

Answer _____

13 Write down the maximum and minimum values of $y = 4 \cos x$. **[3 marks]**

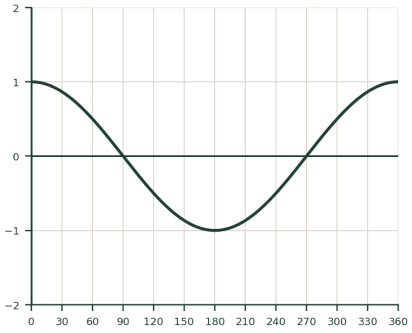
Answer _____

14 Write down all the solutions of sin x = 0.5 for 0° ≤ x ≤ 360°. **[4 marks]**



Answer _____

15 Write down all the solutions of cos x = 0.5 for 0° ≤ x ≤ 360°. **[4 marks]**



Answer _____

Challenge

16 Sketch y = sin 2x. State its period. **[4 marks]**

Answer _____

17 The graph of y = sin x is translated 90° to the left. Write the equation of the new graph, and name the graph it becomes. **[5 marks]**

Answer _____

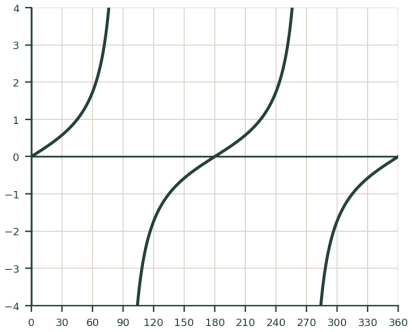
18 A population is modelled by P = 500 × 2^t where t is in years. Work out P when t = 5. **[4 marks]**

Answer _____

19 Find the value of x for which 5^x = 625. **[3 marks]**

Answer _____

20 Use the graph of y = tan x to explain why tan 90° is undefined. **[3 marks]**



Answer _____