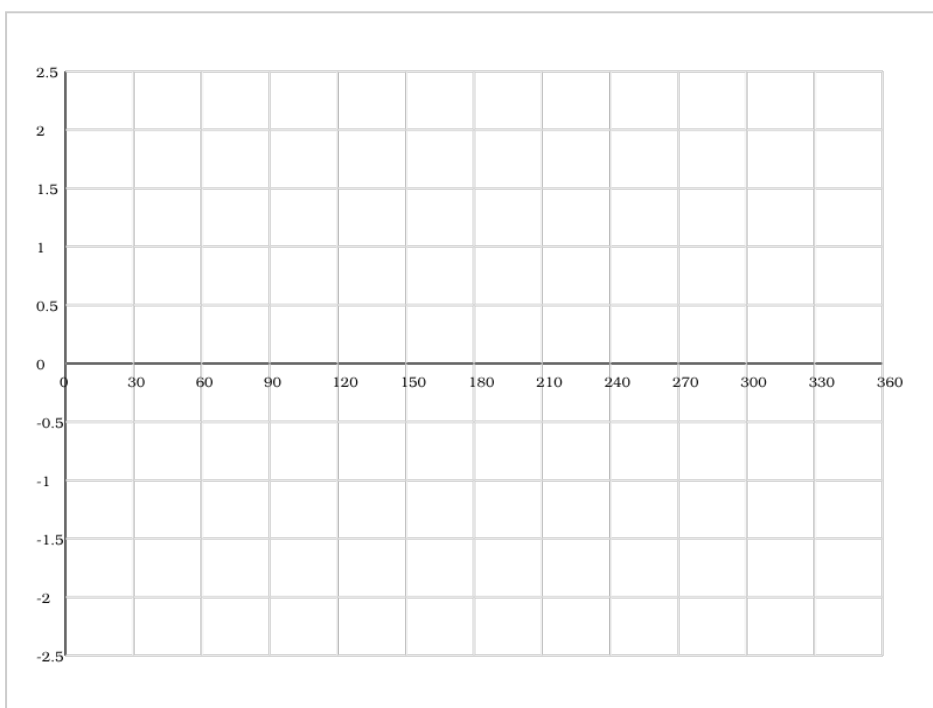# PLOTTING TRIGONOMETRIC GRAPHS

Answer all of these questions. Remember to show your working out in all questions.

MAIN QUESTIONS
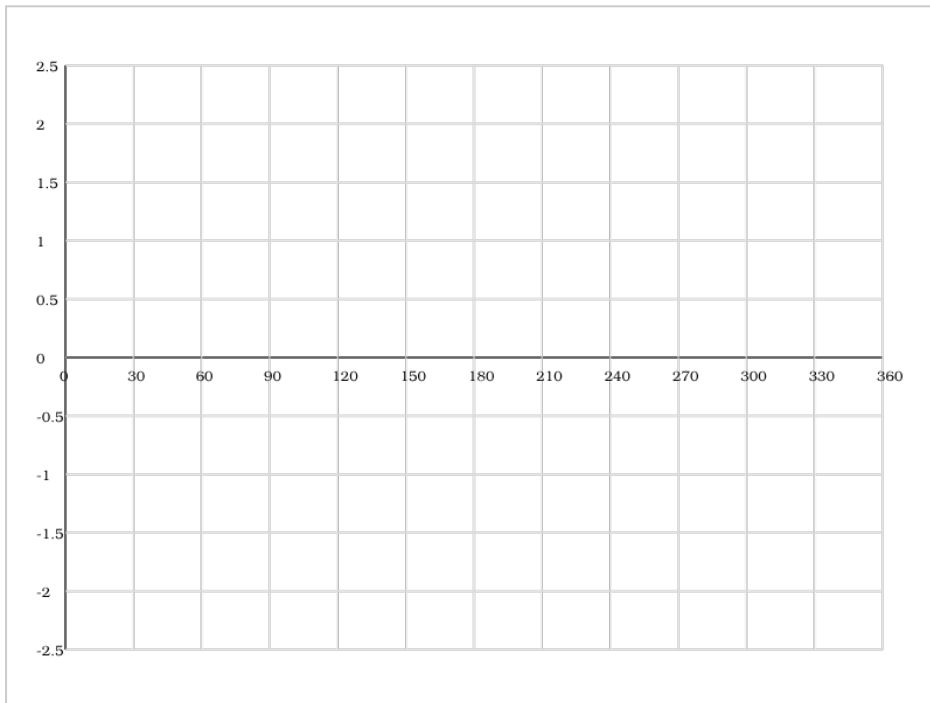
1.

Plot $y = \sin(x)$ for $0° \leq x \leq 360°$

Graph showing sine wave with amplitude 1, period 360°, passing through (0°,0), (90°,1), (180°,0), (270°,-1), (360°,0)

2.

Plot $y = \cos(x)$ for $0° \le x \le 360°$

Graph showing cosine wave with amplitude 1, period 360°, passing through (0°,1), (90°,0), (180°,-1), (270°,0), (360°,1)

3.

Plot $y = 2\sin(x)$ for $0° \leq x \leq 360°$

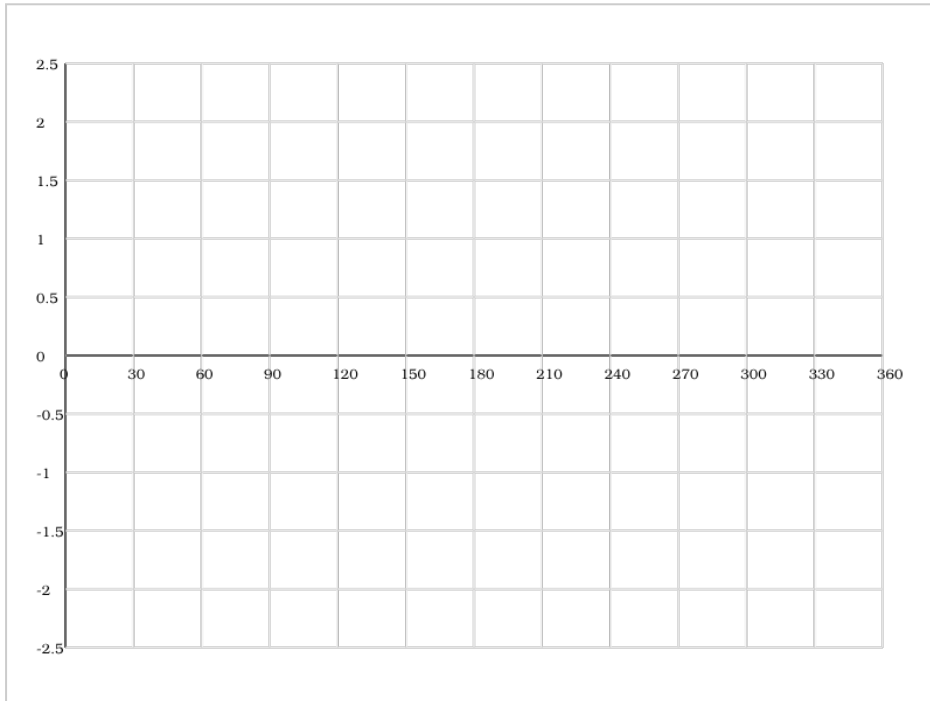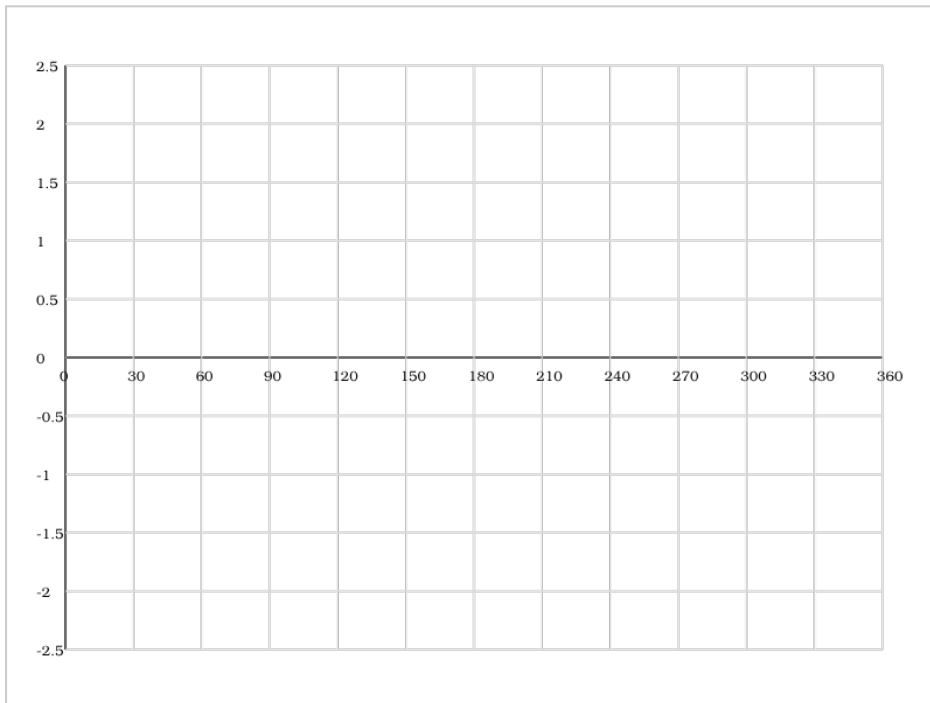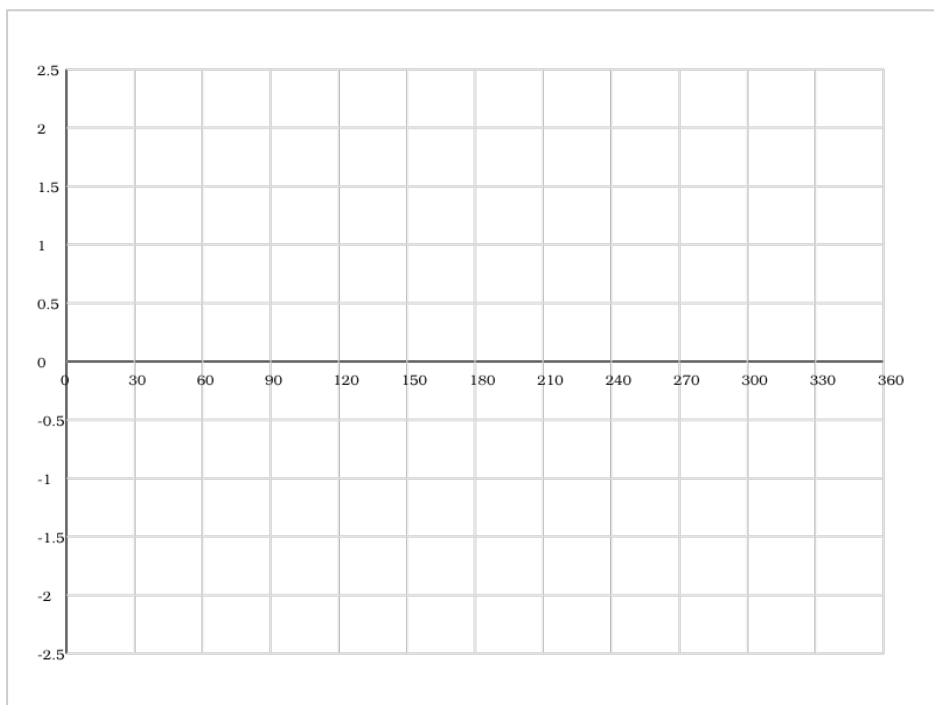Graph showing sine wave with amplitude 2, period 360°, passing through (0°,0), (90°,2), (180°,0), (270°,-2), (360°,0)

4.

Plot $y = 0.5\cos(x)$ for $0° \leq x \leq 360°$

Graph showing cosine wave with amplitude 0.5, period 360°, passing through (0°,0.5), (90°,0), (180°,-0.5), (270°,0), (360°,0.5)

5.
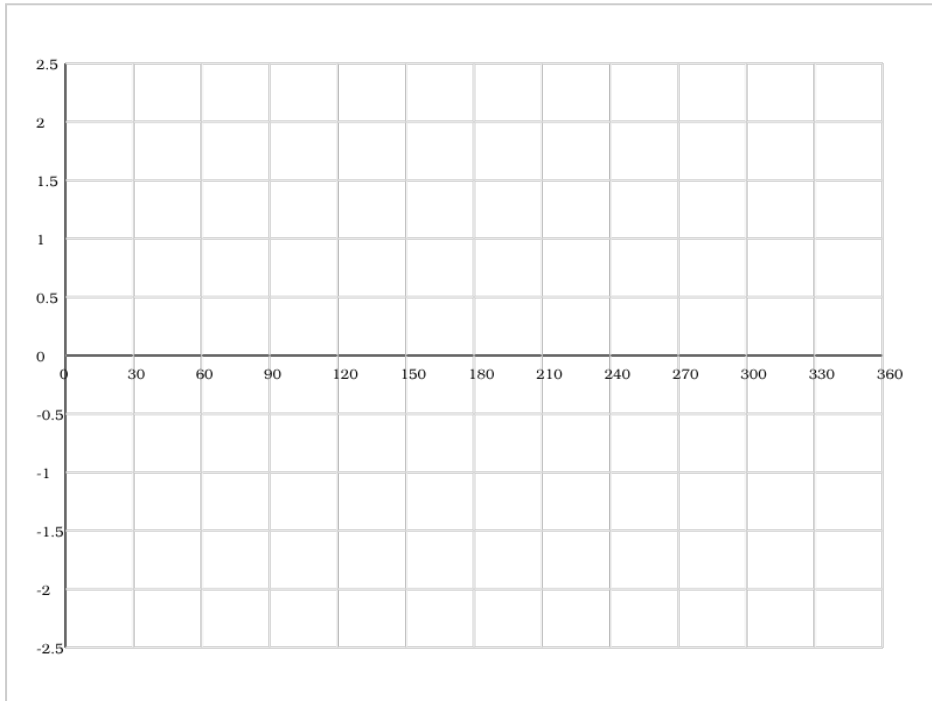
Plot $y = \sin(x) + 1$ for $0° \le x \le 360°$

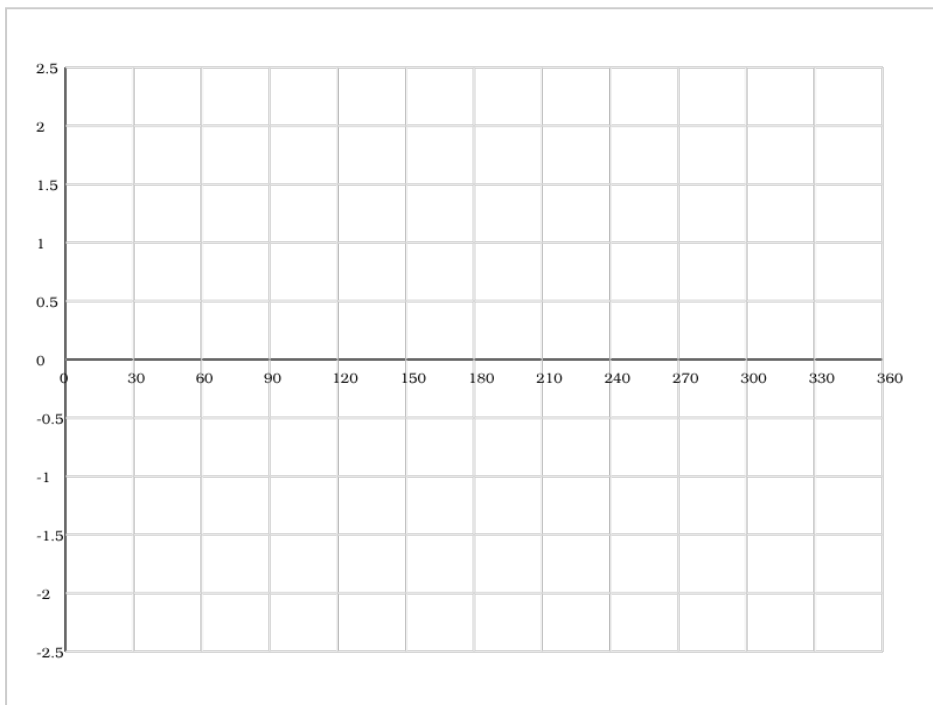Graph showing sine wave shifted up by 1 unit, amplitude 1, range 0 to 2, passing through (0°,1), (90°,2), (180°,1), (270°,0), (360°,1)

6.

Plot $y = -\cos(x)$ for $0° \leq x \leq 360°$

Graph showing inverted cosine wave with amplitude 1, passing through (0°,-1), (90°,0), (180°,1), (270°,0), (360°,-1)

7.

Plot $y = \tan(x)$ for $0° \leq x \leq 360°$

Graph showing tangent curve with vertical asymptotes at 90° and 270°, passing through (0°,0), (45°,1), (135°,-1), (180°,0), (225°,1), (315°,-1)
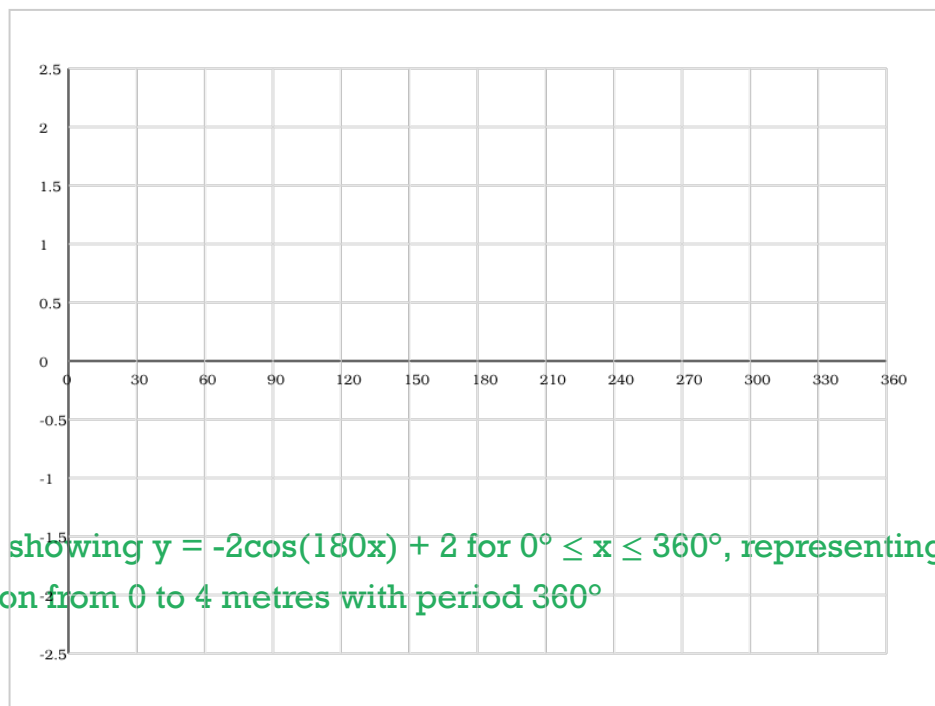
8.

Plot $y = 2\cos(x) - 1$ for $0° \leq x \leq 360°$

MASTER QUESTIONS

M1.

A Ferris wheel has a diameter of 4 metres and completes one full rotation every 2 minutes. The height of a passenger above the ground can be modelled by a trigonometric function. Create a graph showing the height of a passenger over one complete rotation, assuming they start at the lowest point.

Graph showing y = -2cos(180x) + 2 for 0° ≤ x ≤ 360°, representing height variation from 0 to 4 metres with period 360°

The temperature in a laboratory follows a daily cycle that can be approximated by a cosine function. The temperature ranges from 15°C to 25°C, with the maximum occurring at 2pm. Plot a graph showing the temperature variation over a 24-hour period starting at midnight.

Graph showing y = 5cos(15(x-120)) + 20 for $0° \leq x \leq 360°$, representing temperature from 15°C to 25°C with maximum at x=120° (2pm)