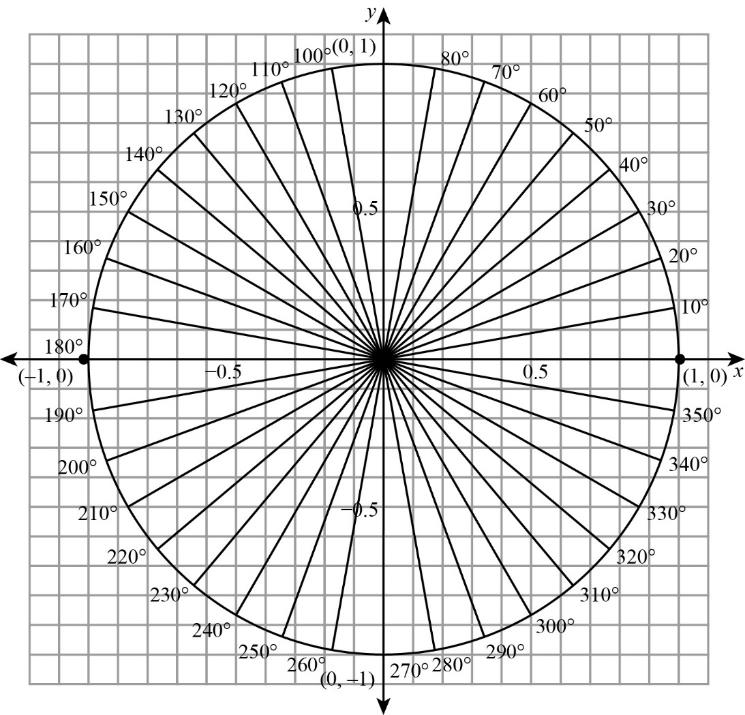
3 Geometry and trigonometry

Activity: Unit circle (Student version)

Questions

Below is an image of the full unit circle.

Complete the table and identify the patterns that develop in your results. Write down the patterns that you discover.



|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***θ* (degrees)** | **-coordinate** | **-coordinate** | **cos *θ* (GDC)** | **sin *θ* (GDC)** |  |
| 0 |  |  |  |  |  |
| 30 |  |  |  |  |  |
| 45 |  |  |  |  |  |
| 60 |  |  |  |  |  |
| 90 |  |  |  |  |  |
| 120 |  |  |  |  |  |
| 135 |  |  |  |  |  |
| 150 |  |  |  |  |  |
| 180 |  |  |  |  |  |
| 210 |  |  |  |  |  |
| 225 |  |  |  |  |  |
| 240 |  |  |  |  |  |
| 270 |  |  |  |  |  |
| 300 |  |  |  |  |  |
| 315 |  |  |  |  |  |
| 330 |  |  |  |  |  |
| 360 |  |  |  |  |  |
| 390 |  |  |  |  |  |

Use the table and the unit circle to plot the following functions on the axes below. AFTER you have done this, check your answers on your GDC.

**1** or

A close up of a white wall

Description automatically generated

**2** or

A close up of a white wall

Description automatically generated

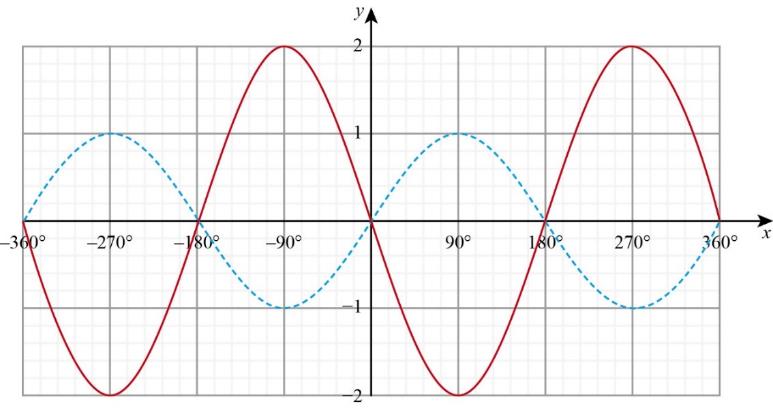
**3** or

A close up of a white wall

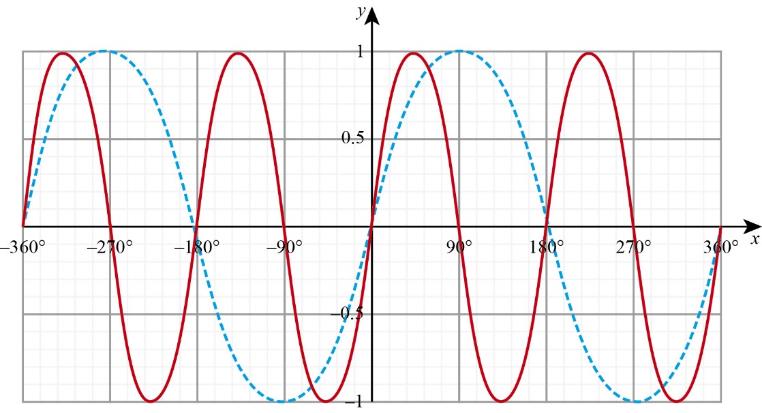
Description automatically generated

Using your knowledge of transformations, describe each transformation and find trigonometric functions for the following graphs in red (the dashed graph is ).

**4**



**5**

****

**6**

**A close up of a map

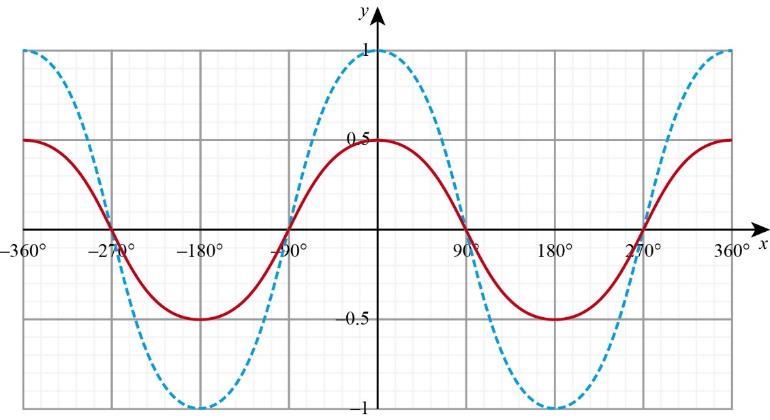
Description automatically generated**

**7**

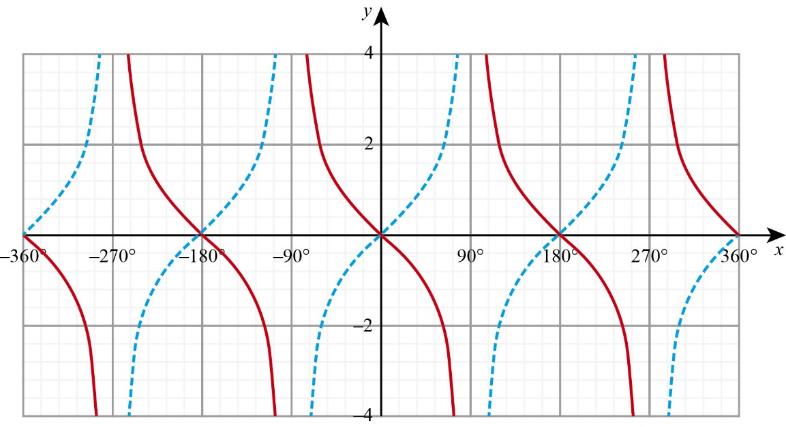
A picture containing sky

Description automatically generated

**8** *NOTE: the dashed blue graph is*



**9** *NOTE: the dashed blue graph is; also, write TWO different answers for this question.*



For each of the functions below:

**a** Briefly describe the transformations.

**b** Create a trigonometric function for the graph.

**c** Describe the range.

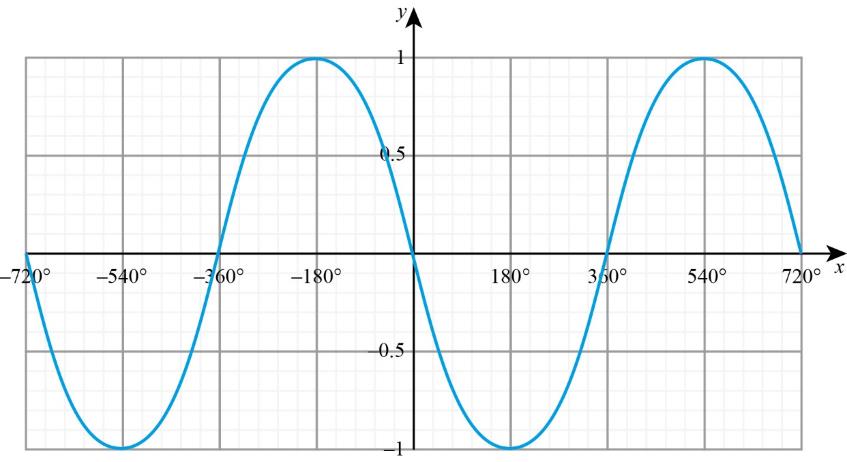
**d** Check your answer on your GDC or graphing software.

**10**

A close up of a mans face

Description automatically generated

**11**



Without using your GDC, graph each of the following functions.

**12**

A close up of text on a white background

Description automatically generated

**13**

A close up of a white wall

Description automatically generated

**14** Create a function for the graph below.

A picture containing text

Description automatically generated

**15** Graph

A close up of a white wall

Description automatically generated

**16** Create a function for the graph below. Be sure to describe the range as well.

A close up of a screen

Description automatically generated