

Artzee Maths

You will need Desmos or GeoGebra for this activity

Desmos has been used for the examples and instructions here, but the same can be done using GeoGebra.

Load Desmos

Click on “graph settings”  in the top right hand corner

and change the values on X-Axis & Y-Axis:

Select Degrees

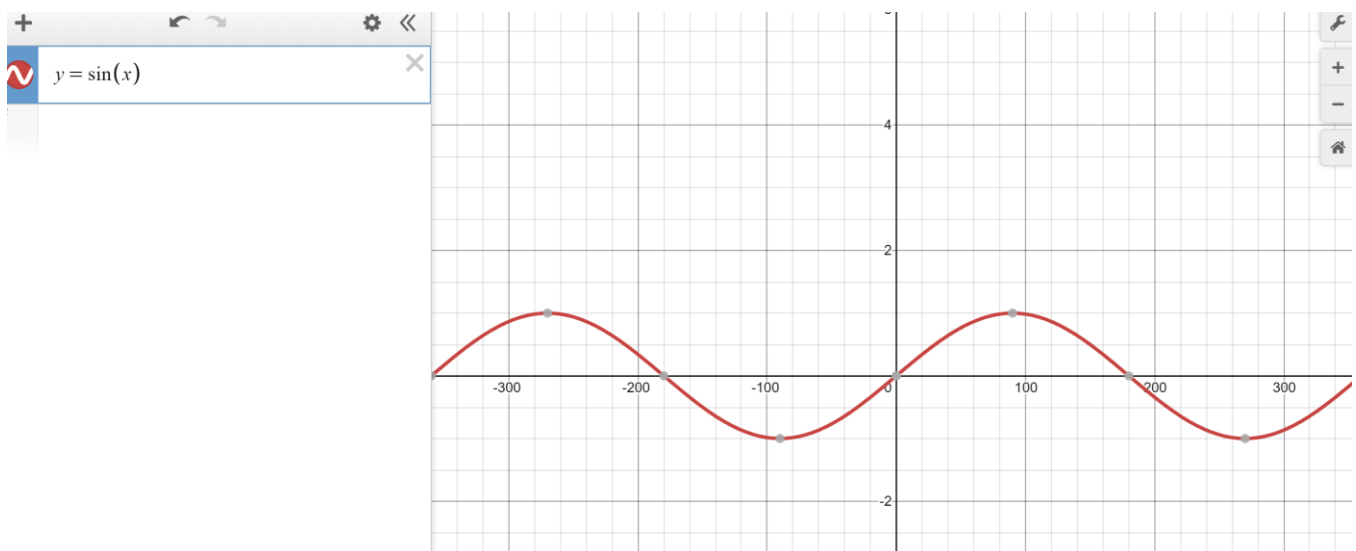
(Radians is another unit for measuring angles which you will learn about if you choose to study AS or A level maths)

<input checked="" type="checkbox"/> X-Axis	add a label
$-360 \leq x \leq 360$	Step: _____
<input checked="" type="checkbox"/> Y-Axis	add a label
$-6 \leq y \leq 6$	Step: _____
<input type="radio"/> Radians	<input checked="" type="radio"/> Degrees

1. Type **$y=\sin(x)$** into the equations box on the left hand side of the screen.

You can find **sin** by showing the keypad on the bottom left, then selecting functions

Your screen should look like this:

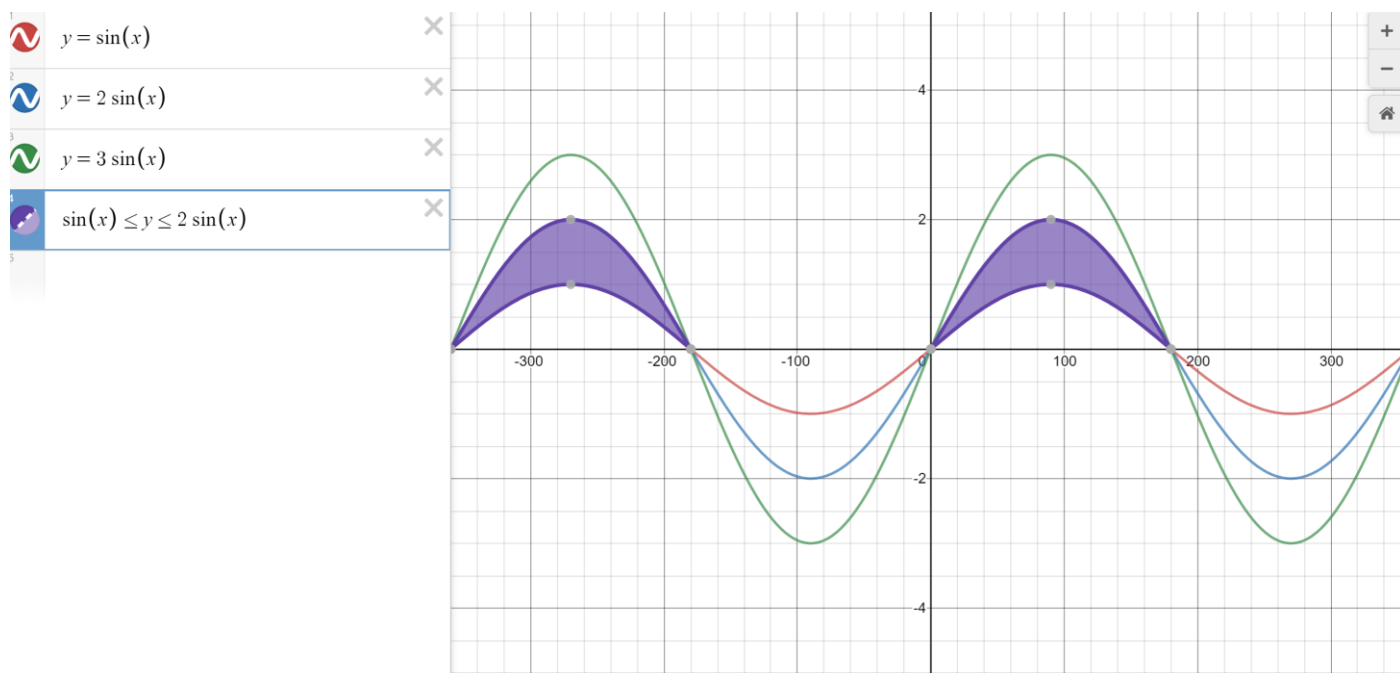


What do you think **$y=2\sin(x)$** will look like?

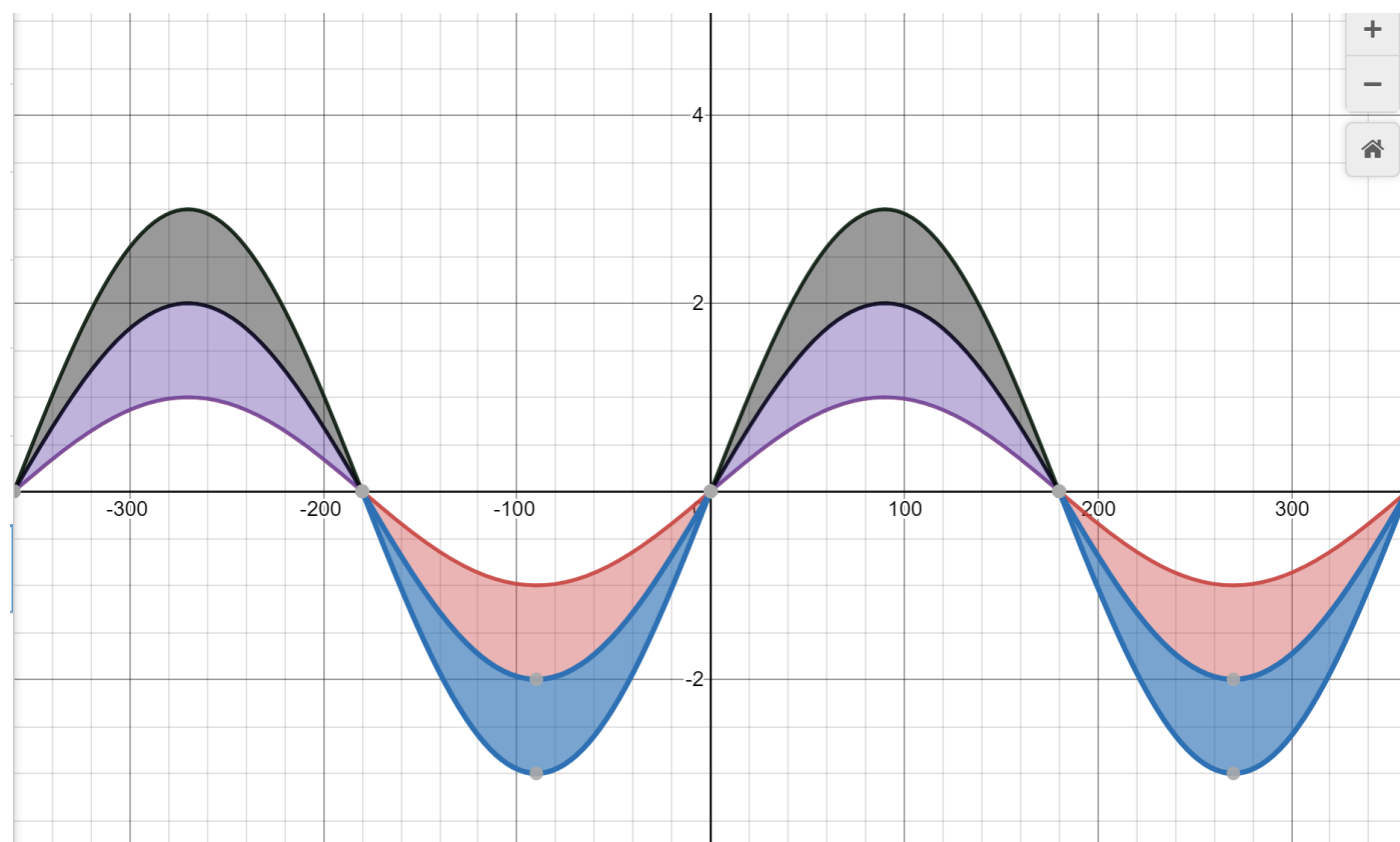
What about **$y=3\sin(x)$**


Type these equations under **$y=\sin(x)$** and see if you are right. Why do they look like this?

Next we are going to colour the regions between **$y=\sin(x)$** and **$y=2\sin(x)$** above the x -axis so that it looks like this, by typing $\sin(x) \leq y \leq 2\sin(x)$ into the next equation box:

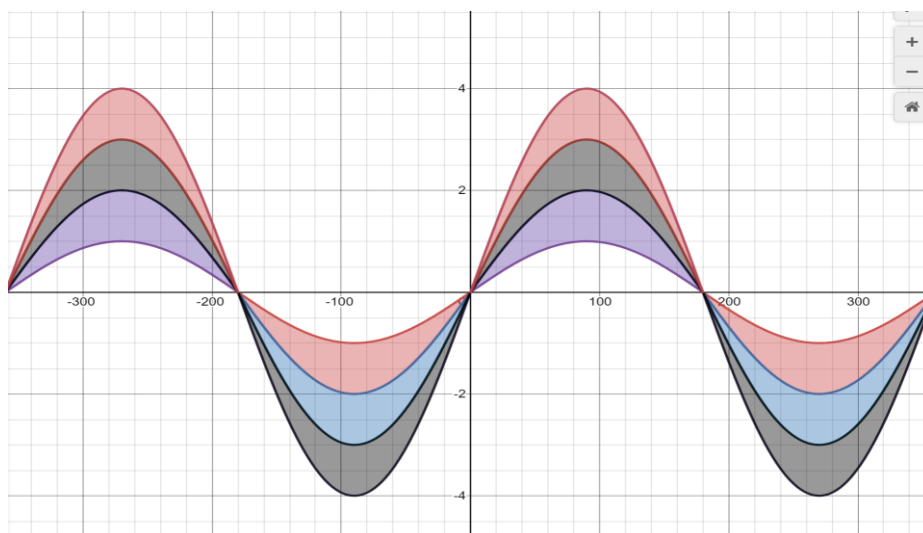


Can you work out how to shade any of the other sections and make it look like this:



If you want to change any of the colours, click the  icon at the top of the page, select the coloured dot you wish to change, select the new colour and then "Done"

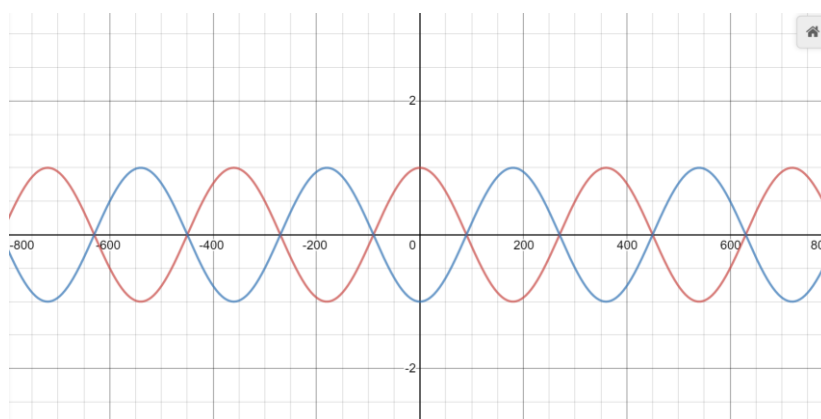
How can you make the pattern look like this?



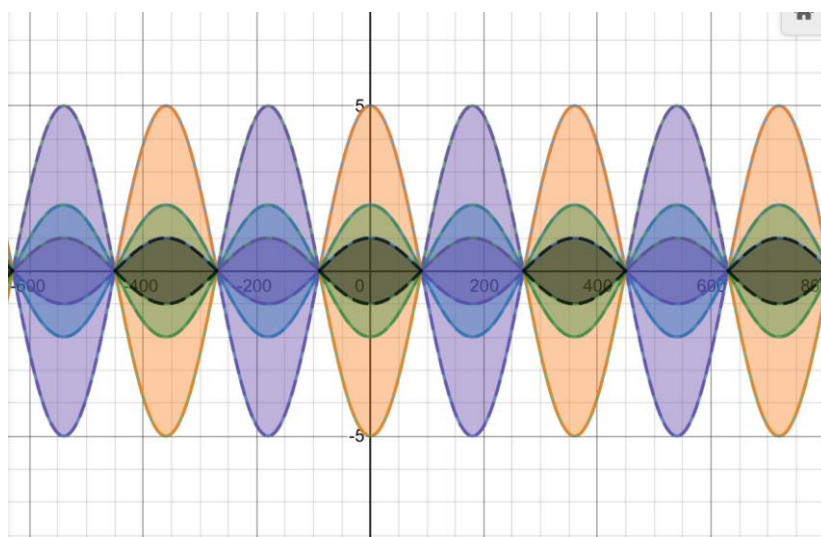
2. Clear the graphs and start with a new Desmos screen: change the x -axis to go from -800 to 800, and y -axis from -10 to 10 (Make sure degrees are selected)

Draw the graph for $y=\cos(x)$

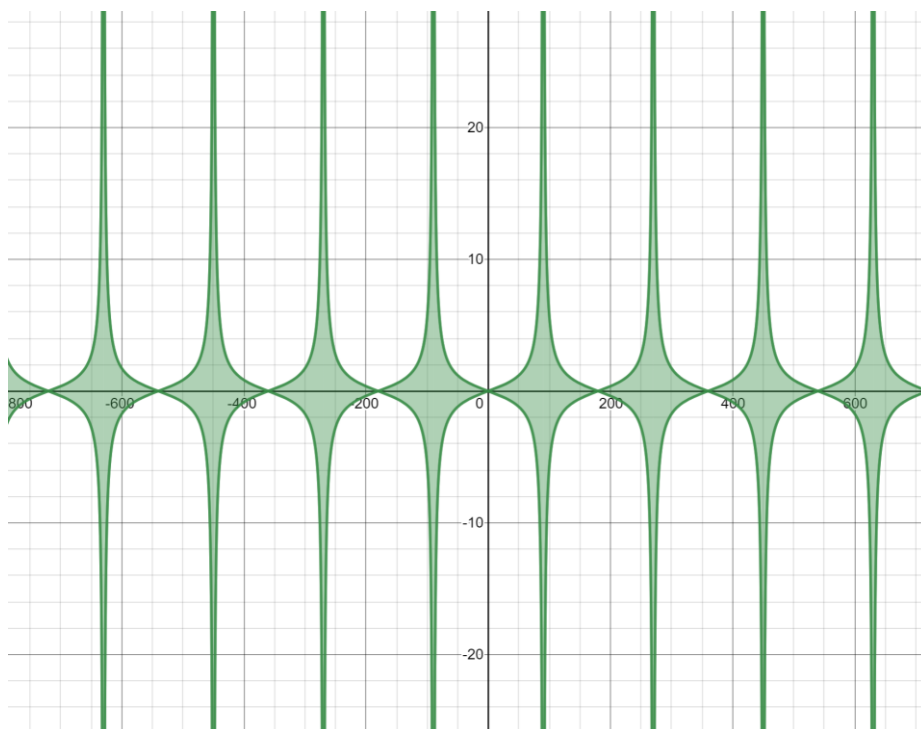
What equation will you need to type in to draw the blue graph too?



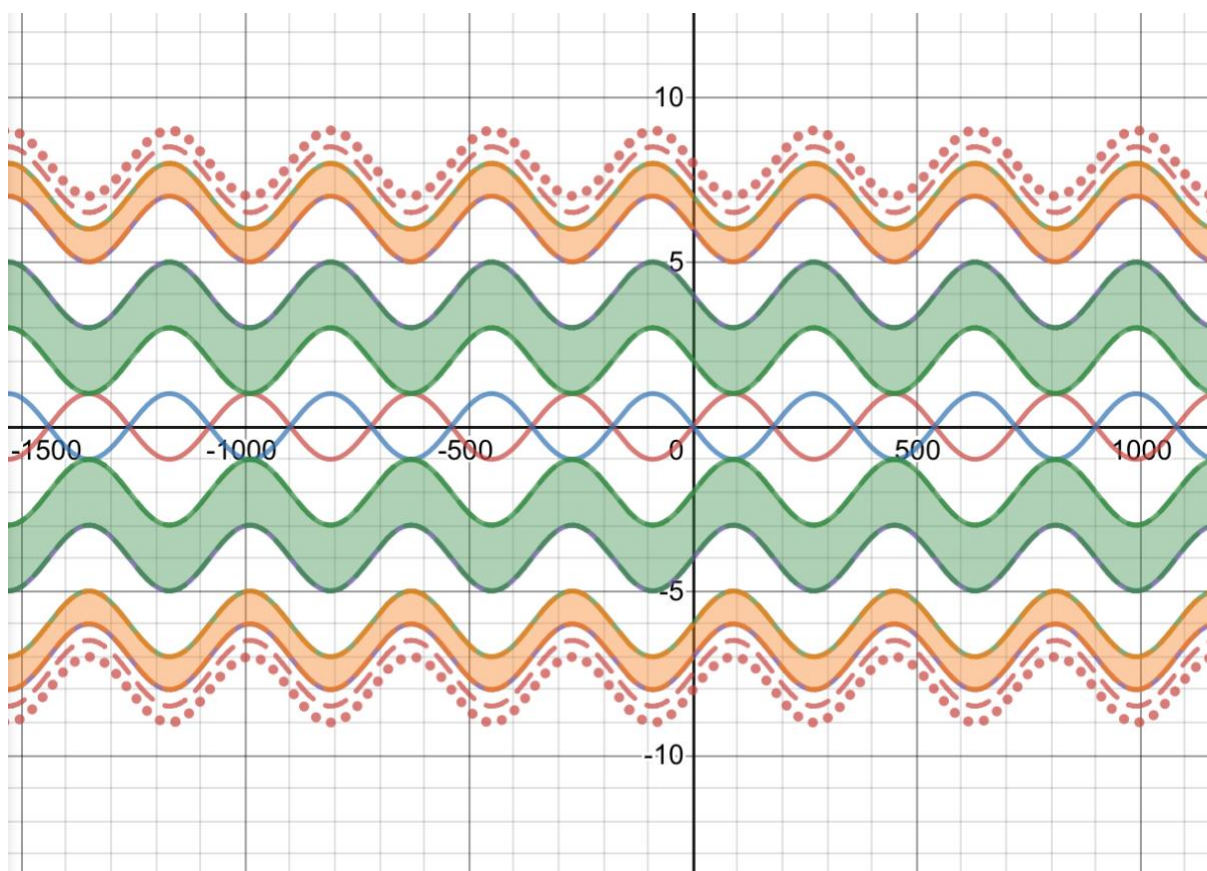
Now see if you can make this pattern:



3. This pattern has been made using graphs of the $\tan(x)$ function. See if you can reproduce it:



4. Can you make a pattern like this one?
Hint: it has only been made with transformations of $y = \sin(x)$



5. Make some of your own designs using graphs of the trig functions, \sin , \cos & \tan