

Risp 26: Generating the Compound Angle Formulae

Pick two distinct whole numbers between 1 and 10 inclusive,
and call them n and m .

Write down the functions $\sin nx$, $\sin mx$, $\cos nx$ and $\cos mx$.
Put these functions into the squares below in some order (no repeats!)

$$y = (\square)(\square) + (\square)(\square)$$

How many different y s can you make?

Draw each possible y using your graphing program -
do you recognise any of these curves?

Based on what you have done, how will the function
 $\sin A \cos B + \sin B \cos A$ simplify, would you guess?

Now put your four functions into the squares below in some order (no repeats!)

$$y = (\square)(\square) - (\square)(\square)$$

How many different y s can you make this time?

Draw each possible y using your graphing program -
do you recognise any of these curves?

Can you predict other connections between $\sin A$, $\cos A$, $\sin B$ and $\cos B$?
Test these out: can you prove them?