Sound, light, water or electrical waves can be described using a combination of Sine and Cosine waves.

The function formed by adding a sine and cosine function can be expressed as a related cosine or sine function.

In general, this is as shown on the formula sheet as sin A plus or subtract B equals sin A cos B plus or subtract cos A Sin B.

And cos A plus or subtract B, equals cos A cos B subtract or plus sin A sin B.

Express two cos x plus three sin x in the form k cos x subtract a.

Expand k cos x subtract a to get kcos x cos a plus k sin x sin a

Rearrange to compare with the original expression and compare the coefficients of cos x and sin x.

So, k cos a equals two and k sin a equals three

To find k take the square root of two squared plus three squared so k equals the square root of thirteen.

To find angle a, use the fact tan a equals sin a over cos a, and that sin a equals three and cos a equals two, from the coefficients of cos x and sin x.

Tan a will be positive as sin x and cos x are both positive from the CAST diagram.

Find the angle by taking the inverse function of three over two, which is fifty six degrees.

Put together to get two cos x plus three sin x equals root thirteen cos x, subtract fifty six degrees.

For wave functions, use the formula sheet and use the CAST diagram to find the angle.