

More complex trigonometric equations

Starter

1. **(Review of last lesson)**
Solve the equation $\sin 3\theta = -0.92$ for $0^\circ \leq \theta \leq 360^\circ$, giving your answer to 3 s.f..
2. Solve the equation $3 \sin^2 \theta - 4 \sin \theta + 1 = 0$ for $-180^\circ \leq \theta \leq 180^\circ$.
3. Solve $5 \sin \theta \cos \theta = 2 \sin \theta$ for $0^\circ \leq \theta \leq 360^\circ$.

Notes

Disguised quadratics involving trigonometric functions are solved in the same way as other types of disguised quadratics i.e. let $u = \dots$

E.g. 1 Solve the equation $\tan^2 \theta + \tan \theta - 12 = 0$ for $0^\circ \leq \theta \leq 360^\circ$.

With trigonometric equations, **avoid dividing** by sine, cosine or tangent in order **to cancel** a function. Instead, **factorise** the expression.

E.g. 2 Solve the equation $5 \cos \theta \tan \theta - 2 \tan \theta = 0$ for $-180^\circ \leq \theta \leq 180^\circ$:

Video: [Trigonometric equations with multiple angles](#)

Video: [Trigonometric equations that factorise](#)

[Solutions to Starter and E.g.s](#)

Exercise

p196 10G Qu 1i, 2i, 3-5, (6-7 red)

Summary

Disguised quadratics involving trigonometry are solved in the same way as other types of disguised quadratics i.e. let $u = \dots$

Avoid dividing by sine, cosine or tangent in order **to cancel** a function. Instead, **factorise** the expression.