

A-Level Starter Activity



Topic: Solving Harder Trig Equations

Chapter Reference: Pure 1, Chapter 9

6
minutes

1. Show that the equation $5 \cos^2 x = 3(1 + \sin x)$ can be written as $5 \sin^2 x + 3 \sin x - 2 = 0$ (2)

2. Hence, solve the equation for $0 \leq x < 360$, giving your answers to 1 d.p. (5)

Solutions

1.

$5 \cos^2 x = 3(1 + \sin x)$ $5(1 - \sin^2 x) = 3 + 3 \sin x$	M1
$5 - 5 \sin^2 x = 3 + 3 \sin x$ $5 \sin^2 x + 3 \sin x - 2 = 0$	M1

2.

Let $y = \sin x$ $5y^2 + 3y - 2 = 0$ $(5y - 2)(y + 1) = 0$	M1
$y = \frac{2}{5}$ $y = -1$	M1
$\sin x = 2.5$ $x = 23.6^\circ$	M1
$\sin x = -1$ $x = 270$	M1
$x = 180 - 23.6 = 156.4^\circ$	M1

