

A-Level Starter Activity



Topic: Solving Harder Trig Equations

Chapter Reference: Pure 1, Chapter 9

10
minutes

1. Solve, $4\cos^2 x + 7 \sin x - 2 = 0$, for $0 \leq x < 360$, giving your answers to 1 d.p. (6)

2. Solve for $\cos(x - 20) = -0.437$ for $0 \leq x < 360$, giving your answers to the nearest degree. (5)

Solutions

1.

$4 \cos^2 x + 7 \sin x - 2 = 0$ $4(1 - \sin^2 x) + 7 \sin x - 2 = 0$	M1
$4 - 4\sin^2 x + 7 \sin x - 2 = 0$ $4 \sin^2 x + 7 \sin x - 2 = 0$	M1
Let $y = \sin x$ $4y^2 - 7y - 2 = 0$	M1
$\sin y = 2$ $\sin y = -\frac{1}{4}$	M1
$y = -14.47$ $y = 180 - (-14.477) = 194.5^\circ$	M1
$y = 360 + (-14.47) = 345.5^\circ$	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

