7 **In this question you must show detailed reasoning.**

(a) Show that the equation $m \sec\theta + 3\cos\theta = 4\sin\theta$ can be expressed in the form

$m \tan^2\theta - 4\tan\theta + (m+3) = 0.$ [3]

(b) It is given that there is only one value of θ, for $0 < \theta < \pi$, satisfying the equation
$m \sec\theta + 3\cos\theta = 4\sin\theta$.

Given also that m is a negative integer, find this value of θ, correct to **3** significant figures.

[5]