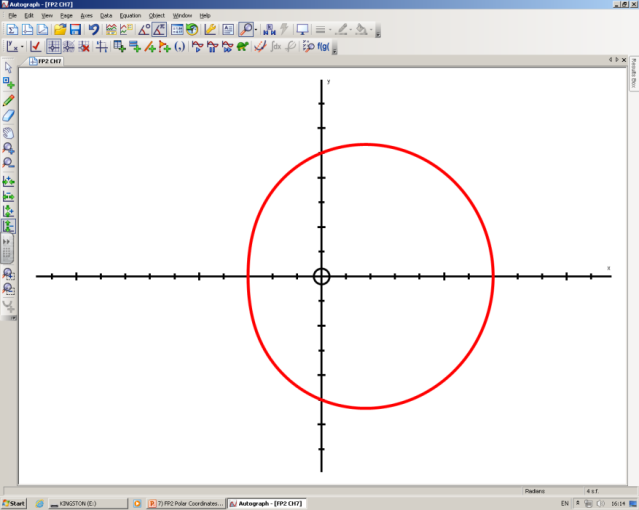
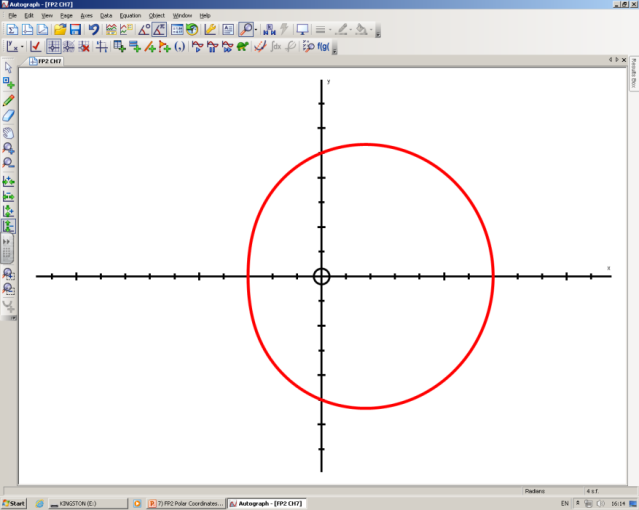
**5D Tangents to Polar Curves**





1. Find the coordinates of the points on:

r = a(1 + cosθ)

Where the tangents are parallel to the initial line θ = 0.



1. Find the coordinates and the equations of the tangents to the curve:

r = asin2θ, 0 ≤ θ ≤ π/2

Where the tangents are:

1. Parallel to the initial line

Give answers to 3 s.f where appropriate:



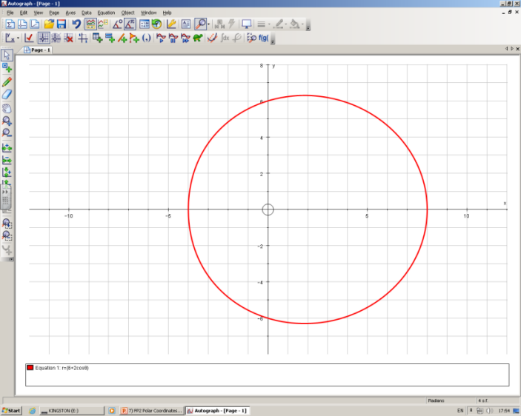
1. Perpendicular to the initial line

Give answers to 3 s.f where appropriate:

1. Prove that for:

r = (p + qcosθ), p and q both > 0 and p ≥ q

to have a ‘dimple’, p < 2q and also

p ≥ q.

