PH-103 Physics-1: Tutorial -1

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1. A particle moves in a circle of radius b with angular velocity $\dot{\theta} = \alpha t$, where α is a constant. (α has the units of rad/s^2). Describe the particle's velocity in polar co-ordinates.

2. Sketch the following figures, ρ = 5, Φ = π/4 and z = 5 in cylindrical polar co-ordinates.

3. Determine the vector $\vec{A} = (y - z)\widehat{e_x} + x\widehat{e_y}$ at the point P (-3, 2, 4) and express it in the cylindrical polar co-ordinates.

4. Express the components of $\vec{A} = 2y\widehat{e_x} - z\widehat{e_y} - x\,\widehat{e_z}$ in cylindrical polar co-ordinates.