

202(10): Change of Angle is a Straight Line

Define a straight line by:

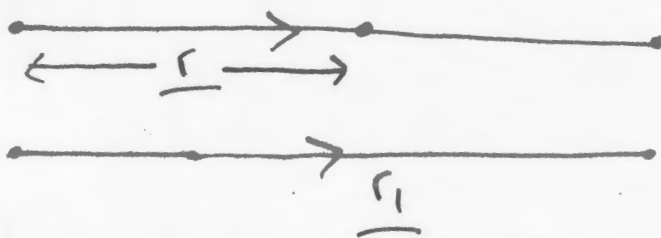
$$\underline{r} = r \underline{e}_r \quad - (1)$$

along the radial direction. Here the unit vector \underline{e}_r is:

$$\underline{e}_r = \underline{i} \cos \theta + \underline{j} \sin \theta \quad - (2)$$

using plane cylindrical coordinates (r, θ) . Let r increase to r_1 , then:

$$\underline{r}_1 = r_1 \underline{e}_r \quad - (3)$$



Then $\underline{r}_1 - \underline{r} = (r_1 - r) \underline{e}_r \quad - (4)$

and the change in angle is:

$$\Delta \theta = 0 \quad - (5)$$

Q.E.D.