22. For the case of plane polar co-ordinates r, θ, write the unit vectors e_r ($= \hat{r}$) and e_θ in terms of i and j. Hence show that $\partial e_r / \partial \theta = e_\theta$ and $\partial e_\theta / \partial \theta = -e_r$. By starting with $r = re_r$ and differentiating, rederive the expressions for the components of the velocity and acceleration vectors.