Solution (#528) Let $\mathbf{p}$ and $\mathbf{q}$ be two points which lie in the plane $\mathbf{r} \cdot \mathbf{n} = c$. Then

$$\mathbf{p} \cdot \mathbf{n} = c, \qquad \text{and} \qquad \mathbf{q} \cdot \mathbf{n} = c.$$

Hence

$$(\mathbf{p} - \mathbf{q}) \cdot \mathbf{n} = \mathbf{p} \cdot \mathbf{n} - \mathbf{q} \cdot \mathbf{n} = c - c = 0$$

and so $\mathbf{p} - \mathbf{q}$ is perpendicular to $\mathbf{n}$.