10/24/23 Discussion:

In questions where you are given four pts P, Q, R, S, and asked if all four lie on the same plane, we need to choose three vectors that touch <u>all</u> of our pts. So the easiest thing to do is to choose vectors all starting at the same pt. e.g. $\vec{PQ}, \vec{PR}, \vec{PS}$

Then we just check if the cross product of two of them is orthogonal to the third

<u>ex</u>: $(\vec{PQ} \times \vec{PR}) \cdot \vec{PS} = 0$

So, something that does NOT work is:

$\vec{PQ}, \vec{PR}, \vec{QR}$.

Since S is not in any of the vectors, checking $(\vec{PQ} \times \vec{PR}) \cdot \vec{QR}$ tells you <u>nothing</u> about whether S lies on the plane.