

1. Compute the angle between the vectors $\hat{x} + \hat{y} + \hat{z}$ and $\hat{x} - \hat{y} - \hat{z}$.
2. Which pairs (if any) of vectors from the following list
 - (a) Are perpendicular?
 - (b) Are parallel?
 - (c) Have an angle less than $\pi/2$ between them?
 - (d) Have an angle of more than $\pi/2$ between them?

Briefly justify your results.

$$\begin{aligned}\vec{a} &= \hat{x} - 3\hat{y} - \hat{z} & \vec{b} &= \hat{x} + \hat{y} + 2\hat{z} \\ \vec{c} &= -2\hat{x} - \hat{y} + \hat{z} & \vec{d} &= -\hat{x} - \hat{y} + \hat{z}\end{aligned}$$