

Question from the national test set by Chinese education authorities

As shown in the figure, in square prism $ABCD-A_1B_1C_1D_1$, $AB=AD=2$, $DC=2\sqrt{3}$, $AA_1=\sqrt{3}$, $AD\perp DC$, $AC\perp BD$, and foot of perpendicular is E ,

- (i) Prove: $BD\perp A_1C$;
- (ii) Determine the angle between the 2 planes A_1BD and BC_1D ;
- iii) Determine the angle formed by lines AD and BC_1 which are in different planes.

