

CLASS 12

MATHEMATICS

REVISION NOTES

Class 12 Mathematics Chapter 11 Three-Dimensional Geometry – Revision Notes

Three-Dimensional Geometry extends coordinate geometry into space, using direction cosines and ratios to describe lines and planes and to calculate distances between them.

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Class 12 Mathematics Chapter 11 – Solutions and Important Questions

Three-Dimensional Geometry extends coordinate geometry into space, using direction cosines and ratios to describe lines and planes and to calculate distances between them.

Direction Cosines/Ratios

$$l^2+m^2+n^2=1.$$

Parallel lines: $a_1/a_2=b_1/b_2=c_1/c_2$. Perpendicular: $a_1a_2+b_1b_2+c_1c_2=0$.

Lines & Planes

Line: $\mathbf{r}=\mathbf{a}+\lambda\mathbf{b}$; Cartesian $(x-x_1)/a=(y-y_1)/b=(z-z_1)/c$.

Plane: $\mathbf{r}\cdot\mathbf{n}=d$; Cartesian $ax+by+cz=d$.

Distances

Point to plane: $|ax_1+by_1+cz_1-d|/\sqrt{a^2+b^2+c^2}$.

Skew lines: scalar triple product formula.

One-Line Summary

3D Geometry extends vectors to describe lines and planes in space using direction cosines/ratios, with distance and angle formulas built from dot and cross products.

Class 12 Mathematics Chapter 11 – Solutions and Important Questions

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