



**Parallel and Perpendicular Lines**

- 1) Equation of a chord is  $3y = 5x + 11$ . Endpoints of another chord is  $(1, -6)$  and  $(4, -1)$ . Prove that the chords are parallel.

**slope of  $3y = 5x + 11$  is  $\frac{5}{3}$**

**slope of chord  $(1, -6)$  and  $(4, -1)$  is  $\frac{5}{3}$**

**The chords are parallel.**

- 2) A line PQ passes through  $(-8, -1)$  and  $(-2, 3)$ . Equation of a line RS is  $-2y = 3x + 13$ . Is  $\overleftrightarrow{PQ}$  parallel to  $\overleftrightarrow{RS}$ ? Justify.

**slope of  $\overleftrightarrow{PQ} = \frac{4}{6} = \frac{2}{3}$**

**slope of  $\overleftrightarrow{RS} = \frac{3}{-2} = -\frac{3}{2}$**

**No. As the slopes are not equal,**

**$\overleftrightarrow{PQ}$  is not parallel to the line RS.**

- 3)  $M(2, -7)$  is the centre of a circle.  $AB$  is a chord of the circle. A line  $5y = -x - 7$  is perpendicular to the chord.

**slope of  $\overline{MN} = \frac{1}{5}$**

**slope of  $5y = -x - 7$  is  $-\frac{1}{5}$**

**Product of the slopes is  $-\frac{1}{5} \times \frac{1}{5} = -\frac{1}{25} \neq -1$ .  
Therefore, the line is not perpendicular to the chord.**

**The line is perpendicular to the chord.**

- 4)  $(-4, 2)$  and  $(5, 6)$  are the endpoints of a chord UV. Are the chords  $\overline{ST}$  and  $\overline{UV}$  parallel? Justify your answer.

**slope of  $\overline{ST} = \frac{4}{9}$**

**slope of  $\overline{UV} = \frac{4}{9}$**

**As the slopes are equal, the chords are parallel.**

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- 5) A line EF passes through  $(2, 5)$  and  $(3, 11)$ . Slope of a line GH is 6. Prove that the lines EF and GH are parallel.

**slope of  $\overleftrightarrow{EF} = 6$  ; slope of  $\overleftrightarrow{GH} = 6$**

**slope of  $\overleftrightarrow{EF} = \text{slope of } \overleftrightarrow{GH}$**

**The lines EF and GH are parallel.**