CLASS XI MATHS ASSIGNMENT Continuation....

Chapter 11. STRAIGHT LINES

General direction for the students :-Whatever be the notes provided , everything must be copied in the Maths Copy and then do the Home work in the same Copy.

Slope (Gradient) of a Straight line:

- Angle form:
  Slope =$\tan\theta$, Where θ is the angle made by the line with the positive direction of the X-axis.
- Two Point form:
  Slope= $\frac{y_2-y_1}{x_2-x_1}$, $(x_1\ ,\ y_1)\ and\ (x_2\ ,\ y_2)$ are the two points.

Angle between Two lines:

$\tan\theta = \left|\frac{m_1-m_2}{1+m_1.m_2}\right|$, Where θ is the acute angle between the lines whose slopes are m_1 and m_2 respectively.

- If two lines are parallel then $m_1=m_2$.
- If two non-vertical lines are perpendicular then $m_1 x\ m_2 = -1$.
- $\tan(90+\theta) = -cot\theta$.

Types of Equation of line:

1. Slope – Intercept form: $y = mx + c$
2. Slope –point form : $(y-y_1) = m(x-x_1)$
3. Two-point form : $(y-y_1) = \frac{y_2-y_1}{x_2-x_1}(x-x_1)$

Exercise 11.4

9. Slope of AB , $m_1=1/2$

Slope of BC , $m_2 = 7/4$

$\tan\theta = \left|\frac{m_1-m_2}{1+m_1.m_2}\right| \Rightarrow \tan\theta = \left|\frac{\frac{1}{2}-\frac{7}{4}}{1+\frac{1}{2}.\frac{7}{4}}\right| = \frac{5/4}{15/8} = 2/3 \Rightarrow \theta = \tan^{-1}(2/3)$

Exercise 11.5

12 ii). Given Slope of the line =tan60=$\sqrt{3}$ and Point (4 , 0).

Equation of line , $y - 0 = \sqrt{3}(x - 4)$

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18 ii). Slope of the given line=4/-1 ⇒=-4

∴ Slope of perpendicular line= ¼

∴ Equation of line , $y - 2 = \frac{1}{4}(x - 5)$

$\Rightarrow 4y - x = 3$

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24. i)Mid-point of BC , D=$(-3 , 4)$

Slope of AD (median)=0

Equation of median , $y - 4 = 0(x + 3)$

$\Rightarrow \ y = 4$. ans

ii) Slope of AC=5/12

⇒ Slope of perpendicular (altitude)=-12/5

⇒ Equation of altitude through B

$y - 9 = \frac{-12}{5}(x + 4)$

$\Rightarrow 5y + 12x = -3$. ans

iii) Mid-point of AB , E=$(3 , 13/2)$

Slope of AB=5/-14

⇒ Slope of the perpendicular=$14/5$

⇒ Equation right bisector

$y - \frac{13}{2} = \frac{14}{5}(x - 3)$

$\Rightarrow 10y - 65 = 28x - 84$

$\Rightarrow 28x - 10y = 19$. ans

HOME WORK: Remaining questions from the Exercise 11.5.