Class 11 Mathematics · Chapter 9: Straight Lines

Worksheet · 20 marks · about 40 minutes · based on NCERT

Name _____ Class and section _____ Date _____

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1. The slope of a line whose inclination with the positive direction of the x-axis is 150° is [1]

(a) $\sqrt{3}$ (b) $-\sqrt{3}$

(c) $-1/\sqrt{3}$ (d) $1/\sqrt{3}$

2. Which of the following lines has a slope that is not defined? [1]

(a) $x = -3$ (b) $y = 4$

(c) $y = x$ (d) $x + y = 0$

3. The equation of the line through $(-3, 1)$ whose inclination is 45° is [1]

(a) $x - y - 4 = 0$ (b) $x + y + 2 = 0$

(c) $x - y + 4 = 0$ (d) $x + y - 4 = 0$

4. The line through $(2, -1)$ and $(5, a)$ is parallel to the line $2x - 3y + 7 = 0$. The value of a is [1]

(a) -3 (b) 1

(c) $-\frac{11}{2}$ (d) 3

5. The acute angle between the lines $y = 3x + 1$ and $y = -2x + 4$ is [1]

(a) 45° (b) 30°

(c) 60° (d) 135°

6. Find the points on the x-axis that are equidistant from the lines $3x + 4y - 12 = 0$ and $4x + 3y - 12 = 0$. [2]

7. The lines L_1: $y = 2x$ and L_2: $y = -3x + 1$ have inclinations α_1 and α_2. Find $\tan\theta$, where $\theta = \alpha_2 - \alpha_1$, and say which of the two adjacent angles between the lines is acute. [2]

8. Show that the lines $x - 2y + 3 = 0$, $2x + y - 4 = 0$ and $3x - y - 1 = 0$ are concurrent, and find the common point. [2]

9. The line $3x - 4y + 12 = 0$ meets the x-axis at P and the y-axis at Q. Find the area of the triangle OPQ, O being the origin, and the length of the perpendicular from O to the line. Check your answers against each other. [3]

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10. Using the inclinations of its sides, show that the triangle with vertices A(0, 0), B(3, $\sqrt{3}$) and C(0, $2\sqrt{3}$) is equilateral. [3]

11. The vertices of a triangle are A(0, 0), B(6, 0) and C(0, 4). Find the equations of its three medians and show that they are concurrent. [3]