# Straight Lines

**Q.No.1:** The number of points, having both co-ordinates as integers, that lie in the interior of the triangle with vertices (0, 0), (0, 41) and (41, 0), is: **JEE 2015**

    **A.** 901

    **B.** 861

    **C.** 820

    **D.** 780

**Q.No.2:**
A ray of light along $x+\sqrt{3}y=\sqrt{3}$ gets reflected upon reaching $x$-axis, the equation of the reflected ray is :

**JEE 2013**

    **A.** $y=x+\sqrt{3}$

    **B.** $\sqrt{3}y=x-\sqrt{3}$

    **C.** $y=\sqrt{3}x-\sqrt{3}$

    **D.** $\sqrt{3}y=x-1$

**Q.No.3:** Two sides of a rhombus are along the lines, $x - y + 1 = 0$ and $7x - y - 5 = 0$. If its diagonals intersect at $(-1, -2)$, then which one of the following is a vertex of this rhombus? **JEE 2016**

    **A.** $(-3, -8)$

    **B.** $\left(\frac{1}{3}, -\frac{8}{3}\right)$

    **C.** $\left(-\frac{10}{3}, -\frac{7}{3}\right)$

    **D.** $(-3, -9)$

**Q.No.4:** A straight line through a fixed point (2, 3) intersects the coordinate

axes at distinct points P and Q. If O is the origin and the rectangle OPRQ is completed, then the locus of R is :                                        **JEE 2018**

   **A.** $3x + 2y = xy$
   **B.** $3x + 2y = 6xy$
   **C.** $3x + 2y = 6$
   **D.** $2x + 3y = xy$

**Q.No.5:** Consider the set of all lines $px + qy + r = 0$ such that $3p + 2q + 4r = 0$. Which one of the following statements is true?                     **JEE 2019**

   **A.** The lines are concurrent at the point $\left(\frac{3}{4}, \frac{1}{2}\right)$.

   **B.** Each line passes through the origin.
   **C.** The lines are all parallel.
   **D.** The lines are not concurrent.

**Q.No.6:** If $\theta$ denotes the acute angle between the curves, $y = 10 - x^2$ and $y = 2 + x^2$ at a point of their intersection, then $|\tan \theta|$ is equal to:     **JEE 2019**

   **A.** $\frac{4}{9}$

   **B.** $\frac{8}{15}$

   **C.** $\frac{7}{17}$

   **D.** $\frac{8}{17}$

**Q.No.7:** Two sides of a parallelogram are along the lines, $x + y = 3$ and $x - y + 3 = 0$. If its diagonals intersect at (2, 4), then one of its vertex is : **JEE 2019**

   **A.** (3, 5)
   **B.** (2, 1)
   **C.** (2, 6)
   **D.** (3, 6)

**Q.No.8:** A helicopter is flying along the curve given by $y - x^{\frac{3}{2}} = 7, \ (x \geq 0)$. A soldier positioned at the point $\left(\frac{1}{2}, \ 7\right)$ wants to shoot down the helicopter when it is nearest to him. Then this nearest distance is :                     **JEE 2019**

   **A.** $\frac{\sqrt{5}}{6}$

**B.** $\frac{1}{3}\sqrt{\frac{7}{3}}$

**C.** $\frac{1}{6}\sqrt{\frac{7}{3}}$

**D.** $\frac{1}{2}$

**Q.No.9:** If in a parallelogram ABCD, the coordinates of A, B and C are respectively (1, 2), (3, 4) and (2, 5) then the equation of the diagonal AD is :

**JEE 2019**

    **A.** $5x - 3y + 1 = 0$

    **B.** $5x + 3y - 11 = 0$

    **C.** $3x - 5y + 7 = 0$

    **D.** $3x + 5y - 13 = 0$

**Q.No.10:** The straight line $x + 2y = 1$ meets the coordinate axes at A and B. A circle is drawn through A, B and the origin. Then the sum of perpendicular distances from A and B on the tangent to the circle at the origin is: **JEE 2019**

    **A.** $\frac{\sqrt{5}}{2}$

    **B.** $2\sqrt{5}$

    **C.** $\frac{\sqrt{5}}{4}$

    **D.** $4\sqrt{5}$