

1. For what value of k are the points $(1,5)$, $(k,1)$ and $(4,1)$ collinear?
2. Find the point to which the origin should be shifted so that the equation $x^2 + xy - 3x - y + 2 = 0$ may not contain any first degree terms in x and y .
3. If the angle between two lines is $\frac{\pi}{4}$ and the slope of one line is $\frac{1}{2}$, find the slope of the other line.
4. Find the equation of line passing through $(1,2)$ and making angle of 60° with y - axis.
5. If $P(1,4)$, $Q(2,-3)$, and $R(-1,-2)$ are the vertices of a ΔPQR , find
 - i. the equation of the median through P
 - ii. the equation of altitude through P