

Q) Find the locus of a point whose distance from line $5x + 12y - 26 = 0$ is same as that from $(5, 12)$.

Let, the required point be (h, k)

$$\text{dist from } (h, k) = \text{dist from } (5, 12)$$

$$\left| \frac{5h + 12k - 26}{\sqrt{5^2 + 12^2}} \right| = \left| \frac{5(5) + 12(12) - 26}{\sqrt{5^2 + 12^2}} \right|$$

$$|5h + 12k - 26| = 23$$

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$$5h + 12k = 3 \text{ or } 49$$

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locus is straight line parallel to given line at a distance of $\frac{23}{13}$ unit.