The Intersection of Lines and Circles

Example: Show that the line $y=x+3$ never intersects the circle with equation

 $x^{2}+y^{2}=1$.

Test your understanding:

1. Find the points of intersection where the line $y=x+6$ meets $x^{2}+\left(y-3\right)^{2}=29$.

2. Using an algebraic (and not geometric) method, determine the $k$ such that the line $y=x+k$ **touches** the circle with equation $x^{2}+y^{2}=1$.

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