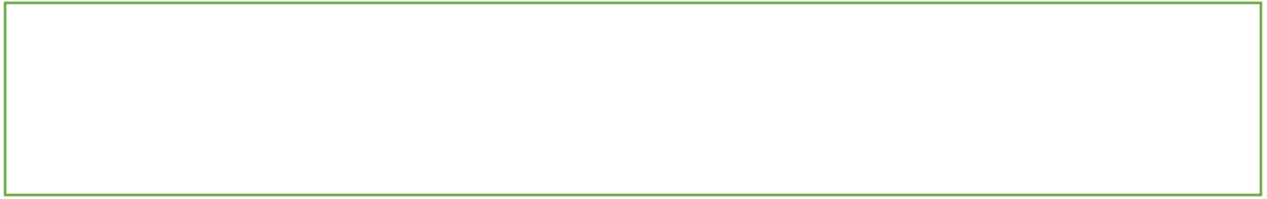


The Intersection of Lines and Circles



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 $x^2 + (y - 3)^2 = 29$.

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