Maths

Intersections of Lines and Circles

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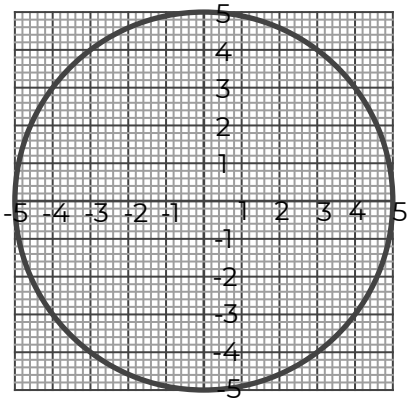
Intersections of lines and circles

1. The graph of $x^2 + y^2 = 25$ is shown.



Hence find estimates for the solutions of the simultaneous equations

$x^2 + y^2 = 25$

$y = 2x + 1$

2. Find the two points of intersection of the circle $x^2 + y^2 = 50$ and the line $y = -x$

Intersections of lines and circles

3. Find the point of intersection of $x^2 + y^2 = 125$ and $y = 2x - 25$

4. Determine whether each pair of equations has two, one or zero intersections.

a) $x^2 + y^2 = 10, y = 3x - 10$

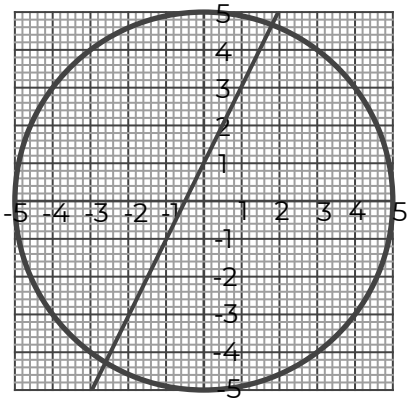
b) $x^2 + y^2 = 10, y = 2x - 10$

c) $x^2 + y^2 = 10, y = 4x - 10$

Answers

Intersections of lines and circles

1. The graph of $x^2 + y^2 = 25$ is shown.



Hence find estimates for the solutions of the simultaneous equations

$x^2 + y^2 = 25$

$y = 2x + 1$

(1.8, 4.6)
(-2.6, -4.1)

2. Find the two points of intersection of the circle $x^2 + y^2 = 50$ and the line $y = -x$

(5, -5) and (-5, 5)

Intersections of lines and circles

3. Find the point of intersection of $x^2 + y^2 = 125$ and $y = 2x - 25$

(10, -5)

4. Determine whether each pair of equations has two, one or zero intersections.

a) $x^2 + y^2 = 10, y = 3x - 10$ one

b) $x^2 + y^2 = 10, y = 2x - 10$ zero

c) $x^2 + y^2 = 10, y = 4x - 10$ two