Mathematics 10D

2.3 – Circles

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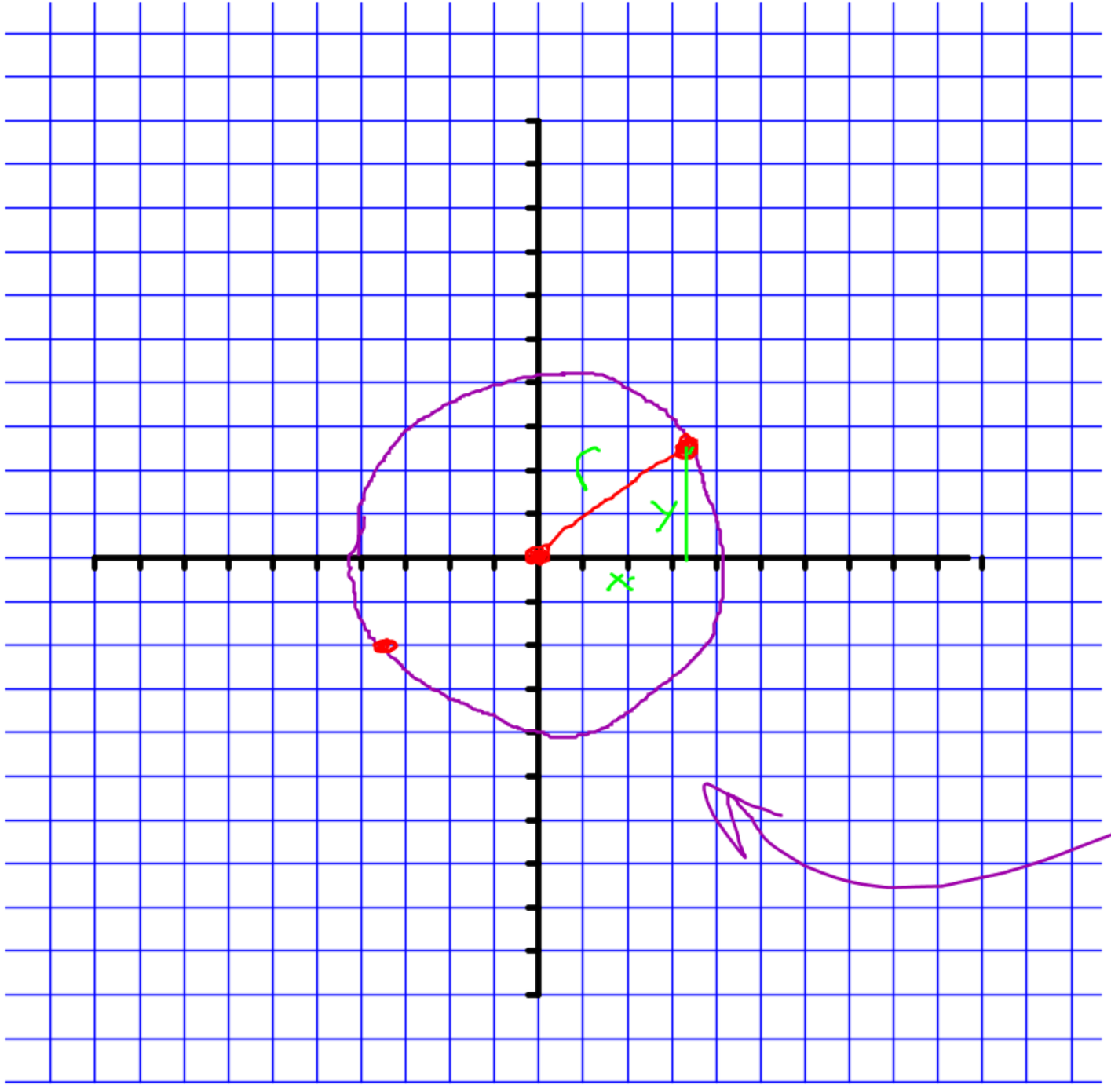


centered at (0,0)

$x^2 + y^2 = r^2$

equation of a circle.

ex: $x^2 + y^2 = 16$

$\therefore r = 4$

Determine the equation of a circle that has its centre at (0, 0) and passes through each point.

a) $(-5, 0)$

$x^2 + y^2 = r^2$

$(-5)^2 + 0 = r^2$

$25 = r^2$

$\therefore x^2 + y^2 = 25$

c) $(-3, -8)$

$x^2 + y^2 = r^2$

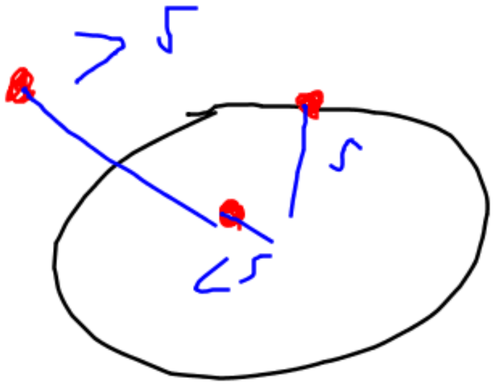
$(-3)^2 + (-8)^2 = r^2$

$9 + 64 = r^2$

$73 = r^2$

$\therefore x^2 + y^2 = 73$

Determine whether each point is on, inside, or outside the circle $x^2 + y^2 = 45$. Explain your reasoning.



a) $(6, -3)$

$x^2 + y^2 = r^2$

$6^2 + (-3)^2 = r^2$

$36 + 9 = r^2$

$45 = r^2$

$\therefore$ on the circle

c) $(-3, 5)$

$x^2 + y^2 = r^2$

$(-3)^2 + (\sqrt{5})^2 = r^2$

$9 + 25 = r^2$

$34 = r^2$

$\therefore$ in the circle.