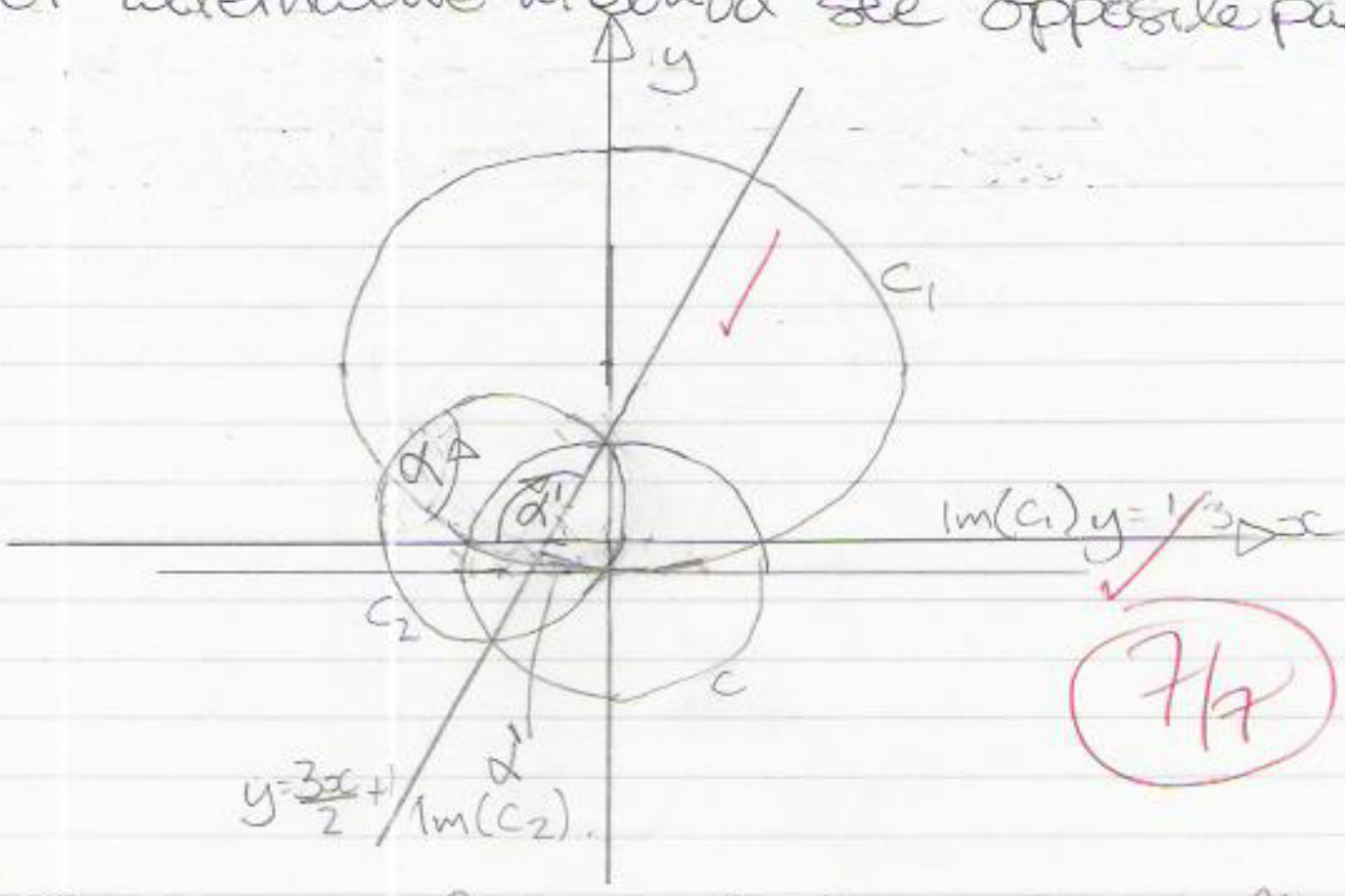
the equation of the line representing the inversion in the unit circle of C_2 is

$y = 3x/2 + 1$

(For alternative method see opposite page)



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ii) The image of C_1 under inversion is the horizontal line $y = 1/3$, and the image of C_2 is the line with gradient $3/2$. The angle α' between the images of C_1 and C_2 is the arctan of this gradient, $\arctan(3/2) = 56.31°$

The angle is reversed in orientation under inversion, so if the angle is clockwise between the images of the circles, it will be anticlockwise between the circles, in orientation.

So we require: $-180° - 56.31°$
$= 123.69°$.

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iii) $C_3 : x^2 + y^2 - 2ax - 2by = 0$

$C_4 : x^2 + y^2 - 2a'x - 2b'y = 0$

Let $(x, y) = \left(\frac{x'}{(x')^2 + (y')^2}, \frac{y'}{(x')^2 + (y')^2} \right)$