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Equation of Perpendicular Bisector | Past Papers Question | C1 Edexcel January 2013 Q5

The line l_1 has equation $y = -2x + 3$

The line l_2 is perpendicular to l_1 and passes through the point $(5, 6)$.

(a) Find an equation for l_2 in the form $ax + by + c = 0$, where a , b and c are integers.

The line l_2 crosses the x -axis at the point A and the y -axis at the point B .

(b) Find the x -coordinate of A and the y -coordinate of B .

Given that O is the origin,

(c) find the area of the triangle OAB .

a) $l_1: y = -2x + 3 \Rightarrow$ gradient of $l_1 = -2$
 \therefore gradient of $l_2 = \frac{1}{2}$

\therefore Equation of l_2 is $y - 6 = \frac{1}{2}(x - 5)$

$\therefore 2y - 12 = x - 5$

$\therefore x - 2y + 7 = 0$

b) For A:

when $y = 0 \Rightarrow x + 7 = 0$

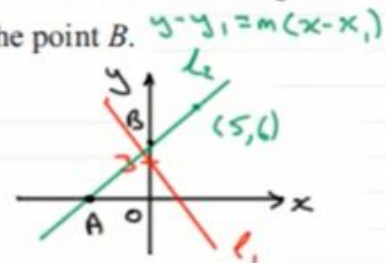
$\therefore x = -7$

For B:

when $x = 0 \Rightarrow -2y + 7 = 0$

$\therefore y = \frac{7}{2}$

c) Area $OAB = \frac{1}{2}(7)\left(\frac{7}{2}\right) = \frac{49}{4} \text{ unit}^2$



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