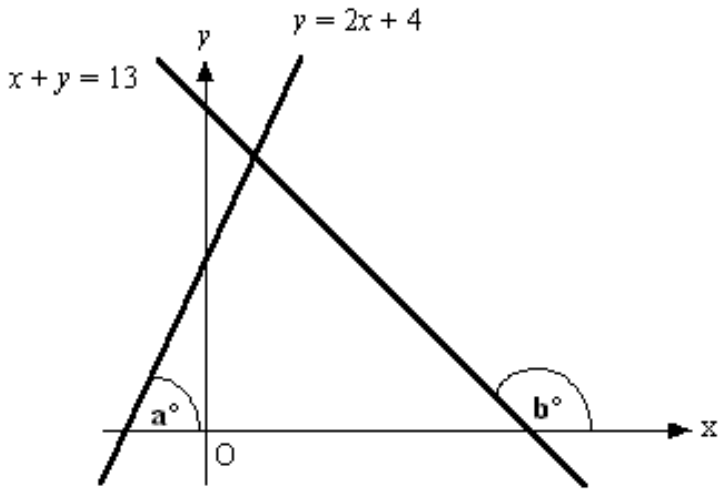
THE STRAIGHT LINE SET 1

1 Find the equation of the line through the point (3,-5) which is parallel to the line with equation $3x + 2y - 5 = 0$.

2 The points A and B have coordinates (a,a^2) and $(2b,4b^2)$ respectively.
Determine the gradient of AB in its simplest form.

3 The lines $y = 2x + 4$ and $x + y = 13$ make angles of $a°$ and $b°$ with the positive direction of the x-axis, as shown in the diagram.

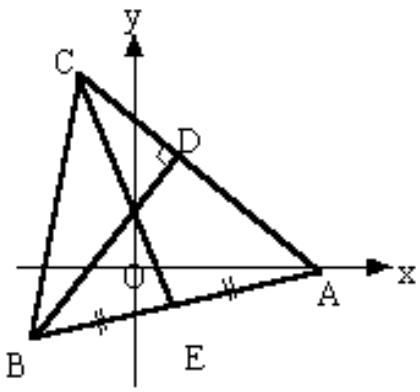


(a) Find the values of a and b.

(b) Hence find the acute angle between the two given lines.

4 K is the point (-2,-3), L is (3,8) and M(8,-3).
Show that the triangle KLM is isosceles but not equilateral.
Find the equation of the axis of symmetry of triangle KLM.

5 In the diagram, A is the point (7,0), B is (-3,-2) and C(-1,8). The median CE and the altitude BD intersect at J.



(a) Find the equations of CE and BD.

(b) Find the coordinates of J.

6 ABCD is a kite with vertices at (1,1), (3,5), (7,7) and (a,b) respectively, where vertex D(a,b) is the locus of the sides AD, CD and the perpendicular bisectors of AB and BC. Find algebraically the coordinates of point D.

7 In the diagram below, ΔOAB and ΔOBC are congruent where OC is of length 8 units and BC is 5 units.

Find the equation of the line AB.