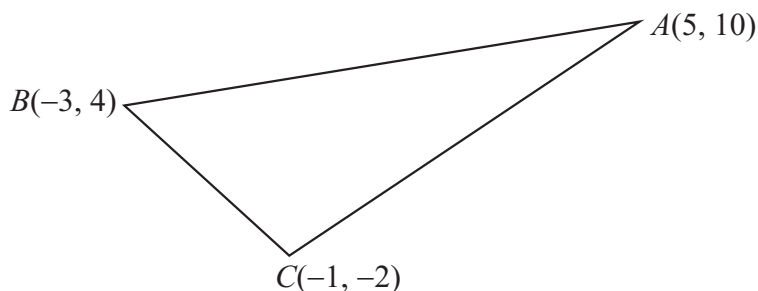


## SAMPLE PAPER 1: PAPER 2

### QUESTION 1 (25 MARKS)



#### Question 1 (a)

$$A(5, 10), B(-3, 4)$$

$$\text{Mid-point} = \left( \frac{5-3}{2}, \frac{10+4}{2} \right) = (1, 7)$$

$$m = \frac{4-10}{-3-5} = \frac{-6}{-8} = \frac{3}{4} \Rightarrow m_{\perp} = -\frac{4}{3}$$

$$k: (y-7) = -\frac{4}{3}(x-1)$$

$$3(y-7) = -4(x-1)$$

$$3y-21 = -4x+4$$

$$4x+3y-25=0$$

$$A(5, 10), C(-1, -2)$$

$$\text{Mid-point} = \left( \frac{5-1}{2}, \frac{10-2}{2} \right) = (2, 4)$$

$$m = \frac{-2-10}{-1-5} = \frac{-12}{-6} = 2 \Rightarrow m_{\perp} = -\frac{1}{2}$$

$$l: (y-4) = -\frac{1}{2}(x-2)$$

$$2(y-4) = -1(x-2)$$

$$2y-8 = -x+2$$

$$x+2y-10=0$$

#### Question 1 (b)

$$4x+3y-25=0$$

$$x+2y-10=0(\times -4)$$

[Solve the equations simultaneously for  $k$  and  $l$  to find their point of intersection  $D$ .]

$$4x+3y-25=0$$

$$-4x-8y+40=0$$

$$\hline -5y+15=0 \Rightarrow y=3$$

$$x+2(3)-10=0$$

$$x+6-10=0$$

$$\therefore x=4$$

Circumcentre  $D(4, 3)$

$$r = |AD| = \sqrt{(5-4)^2 + (10-3)^2} = \sqrt{1+49} = \sqrt{50} = 5\sqrt{2}$$

Equation of circumcircle:  $(x-4)^2 + (y-3)^2 = (\sqrt{50})^2$

$$(x-4)^2 + (y-3)^2 = 50$$