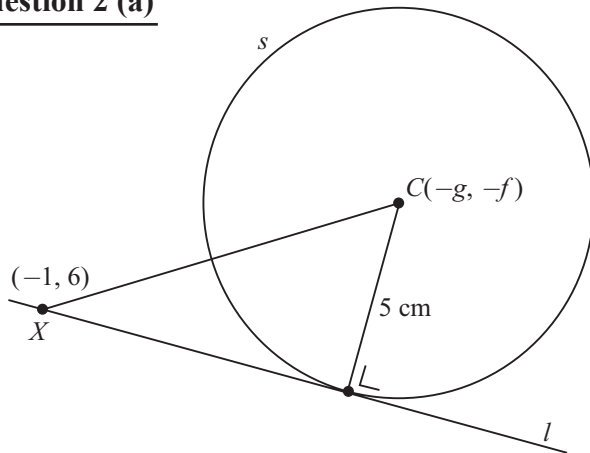


LC 2016 (SET A): PAPER 2

QUESTION 2 (25 MARKS)

Question 2 (a)



Point $(x_1, y_1) = X(-1, 6)$, $m = \frac{1}{7}$

Equation of XC : $(y - 6) = \frac{1}{7}(x - (-1))$

$$7y - 42 = x + 1$$

$$x - 7y + 43 = 0$$

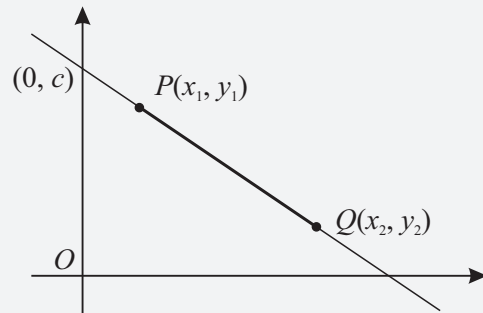
MARKING SCHEME NOTES

Question 2 (a) [Scale 10C (0, 3, 7, 10)]

3: • equation of line formula with some relevant substitution

7: • equation of line not in required form

FORMULAE AND TABLES BOOK Co-ordinate geometry: Line



Equation of PQ [page 18]

$$y - y_1 = m(x - x_1)$$

Slope of PQ [page 18]

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Distance from (x_1, y_1) to the line
 $ax + by + c = 0$ [page 19]

$$\frac{|ax_1 + by_1 + c|}{\sqrt{a^2 + b^2}}$$

Question 2 (b)

$C(-g, -f)$, $d = 5$

$$5 = \frac{|3(-g) + 4(-f) - 21|}{\sqrt{3^2 + 4^2}} \Rightarrow 5 = \frac{|-3g - 4f - 21|}{5}$$

$$|-3g - 4f - 21| = 25$$

$$-3g - 4f - 21 = \pm 25$$

$$\therefore 3g + 4f = -46 \dots (1)$$

$$\text{or } 3g + 4f = 4 \dots (1)$$

$C(-g, -f)$, $X(-1, 6)$, $m = \frac{1}{7}$

$$\frac{6 + f}{-1 + g} = \frac{1}{7}$$

$$42 + 7f = -1 + g$$

$$g - 7f = 43 \dots (2)$$

FORMULAE AND TABLES BOOK

Co-ordinate geometry: Circle [page 19]

Given centre (h, k) and radius r

$$(x - h)^2 + (y - k)^2 = r^2$$

Given equation

$$x^2 + y^2 + 2gx + 2fy + c = 0$$

Centre $(-g, -f)$

Radius $\sqrt{g^2 + f^2 - c}$

Circle 1 :

$$3g + 4f = -46 \dots (1)$$

$$g - 7f = 43 \dots (2) (\times -3)$$

$$3g + 4f = -46$$

$$\underline{-3g + 21f = -129}$$

$$25f = -175 \Rightarrow f = -7$$

Into (2): $g - 7(-7) = 43 \Rightarrow g + 49 = 43$

$$\therefore g = -6$$

Centre = $(-g, -f) = (6, 7), r = 5$

$$(x - 6)^2 + (y - 7)^2 = 25$$

Circle 2 :

$$3g + 4f = 4 \dots (1)$$

$$g - 7f = 43 \dots (2) (\times -3)$$

$$3g + 4f = 4$$

$$\underline{-3g + 21f = -129}$$

$$25f = -125 \Rightarrow f = -5$$

Into (2): $g - 7(-5) = 43 \Rightarrow g + 35 = 43$

$$\therefore g = 8$$

Centre = $(-g, -f) = (-8, 5), r = 5$

$$(x + 8)^2 + (y - 5)^2 = 25$$

MARKING SCHEME NOTES

Question 2 (b) [Scale 15D (0, 4, 7, 11, 15)]

4: • some correct substitution into relevant formula (line, circle, perpendicular distance).

7: • one relevant equation in g and f

• (either(i) or (ii) or (iii))

11: • two relevant equations (either (i) and (iii) or (ii) and (iii))