

## LC 2014: PAPER 2

### QUESTION 5 (25 MARKS)

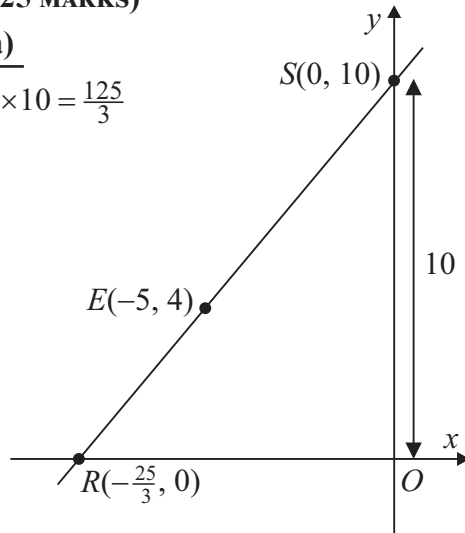
#### Question 5 (a)

$$\text{Area} = \frac{1}{2}|OR| \times 10 = \frac{125}{3}$$

$$5|OR| = \frac{125}{3}$$

$$\therefore |OR| = \frac{25}{3}$$

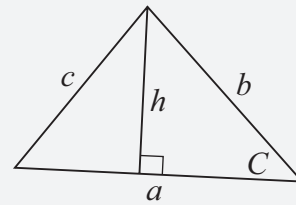
$$\therefore R\left(-\frac{25}{3}, 0\right)$$



#### FORMULAE AND TABLES BOOK:

##### Length and area (page 9)

#### TRIANGLE



$$A = \frac{1}{2} ah$$

$$A = \frac{1}{2} ab \sin C$$

#### Question 5 (b)

$$R\left(-\frac{25}{3}, 0\right), S(0, 10)$$

$$\text{Slope of } RS = \frac{10-0}{0-\left(-\frac{25}{3}\right)} = \frac{6}{5}$$

$$\text{Equation of } RS: y-10 = \frac{6}{5}(x-0)$$

$$5y-50 = 6x$$

$$6x-5y+50 = 0$$

$$E(-5, 4) \in RS : 6x-5y+50 = 0?$$

$$6(-5) - 5(4) + 50$$

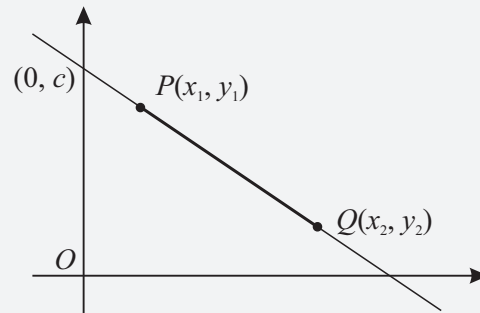
$$= -30 - 20 + 50$$

$$= 0$$

$$\therefore E(-5, 4) \in RS$$

#### FORMULAE AND TABLES BOOK

##### Co-ordinate geometry: Line



Slope of  $PQ$  [page 18]

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

Equation of  $PQ$  [page 18]

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

$$y = mx + c$$

#### MARKING SCHEME NOTES

##### Question 5 (a) [Scale 10C (0, 3, 7, 10)]

- 3: • Relevant area of triangle formula  
 7: •  $|OR|$  found but  $x$  ordinate of  $R$  not stated  
 • Substantially correct work with one error

##### Question 5 (b) [Scale 10C (0, 3, 7, 10)]

- 3: • Effort at finding one slope  
 • Effort at finding equation of  $RS$   
 7: • Relevant conclusion not stated or implied  
 •  $E$  inserted into equation of  $RS$  but relevant conclusion not stated or implied

**Question 5 (c)**

$$y = mx + c$$

$$E(-5, 4) \in y \Rightarrow 4 = -5m + c$$

$$\therefore c = 5m + 4$$

$$y = mx + 5m + 4$$

$$x = 0 : y = 5m + 4$$

$\therefore (0, 5m + 4)$  is the y intercept

$$y = 0 : 0 = mx + 5m + 4$$

$$mx = -5m - 4$$

$$x = \frac{-5m - 4}{m}$$

$\therefore \left( \frac{-5m - 4}{m}, 0 \right)$  is the x intercept

$$\text{Area} = \frac{1}{2} \left( \frac{5m + 4}{m} \right) (5m + 4) = \frac{125}{3}$$

$$3(5m + 4)^2 = 250m$$

$$3(25m^2 + 40m + 16) = 250m$$

$$75m^2 + 120m + 48 = 250m$$

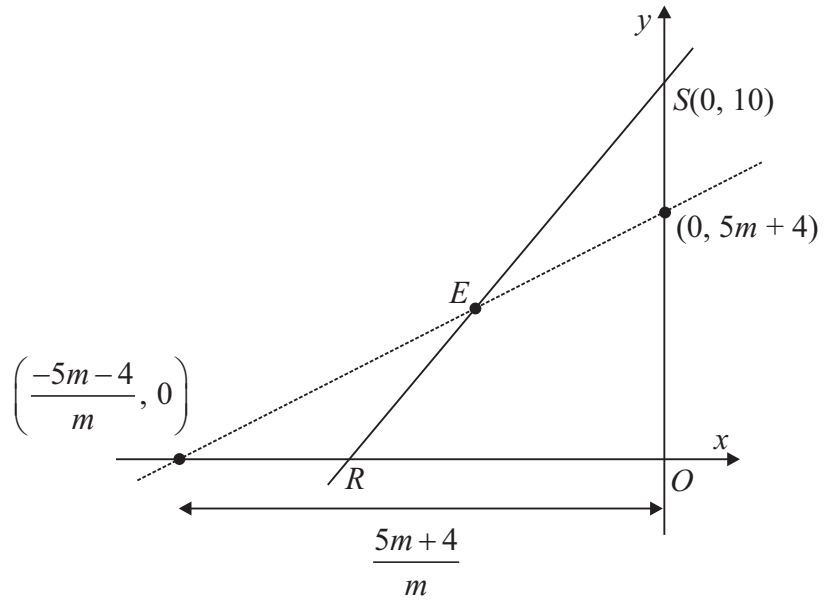
$$75m^2 - 130m + 48 = 0$$

$$(5m - 6)(15m - 8) = 0$$

$$\therefore m = \frac{6}{5}, \frac{8}{15}$$

$$c = 4 + 5m = 4 + 5\left(\frac{8}{15}\right) = \frac{20}{3}$$

ANSWERS:  $m = \frac{8}{15}, c = \frac{20}{3}$



**MARKING SCHEME NOTES**

**Question 5 (c) [Scale 5C (0, 2, 3, 5)]**

- 2: • Effort at finding intercept on one or both axes  
 • Effort at inserting  $(-5, 4)$  into  $y = mx + c$
- 3: • Either  $c$  or  $m$  found