

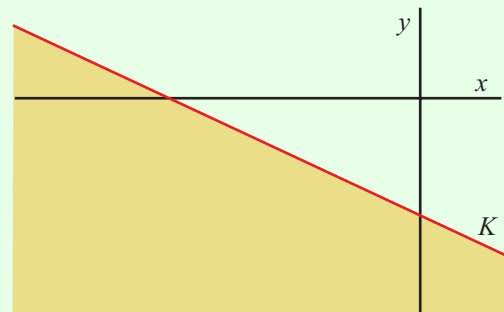
LINEAR PROGRAMMING (Q 11, PAPER 2)

2008

11 (a) (i) Does the point $(18, -15)$ satisfy the inequality $3x + 5y + 11 \geq 0$?
Justify your answer.

(ii) The equation of the line K is
 $x + 2y + 4 = 0$.

Write down the inequality which defines
the shaded half-plane in the diagram.



(b) A small restaurant offers two set lunch menus each day: a fish menu and a meat menu.

The fish menu costs €12 to prepare and the meat menu costs €18 to prepare.

The total preparation costs must not exceed €720.

The restaurant can cater for at most 50 people each lunchtime.

(i) Taking x as the number of fish menus ordered and y as the number of meat menus ordered, write down two inequalities in x and y and illustrate these on graph paper.

(ii) The price of a fish menu is €25 and the price of a meat menu is €30. How many of each type would need to be ordered each day to maximise income?

(iii) Show that the maximum income does not give the maximum profit.

ANSWERS

11 (a) (i) No

(ii) $x + 2y + 4 \leq 0$

(b) (i) $x + y \leq 50$, $2x + 3y \leq 120$

(ii) $x = 30$, $y = 20$