

**Quiz 7**

**First Name:** .....

**Last Name:** .....

**Student Number:** .....

1) Find the cutting plane for  $x_1$  in the following problem.

$$\begin{array}{ll}\max & 5x_1 + 6x_2 \\ \text{subject to} & 10x_1 + 3x_2 \leq 52 \\ & 2x_1 + 3x_2 \leq 18 \\ & x_1, x_2 \geq 0, \text{ integer}\end{array}$$

where the final tableau for the related LP is:

	x1	x2	x3	x4	
x1	1	0	$\frac{1}{8}$	$-\frac{1}{8}$	$\frac{17}{4}$
x2	0	1	$-\frac{1}{12}$	$\frac{5}{12}$	$\frac{19}{6}$
	0	0	$\frac{1}{8}$	$\frac{15}{8}$	$\frac{161}{4}$

and  $x_3$  and  $x_4$  are the slack variables of the constraints. [3 points]

2) Solve the IP problem using the branch and bound method. [7 points]

$$\begin{array}{ll}\max & 3x_1 + 13x_2 \\ \text{subject to} & 2x_1 + 9x_2 \leq 40 \\ & 11x_1 - 8x_2 \leq 82 \\ & x_1, x_2 \geq 0, \text{ integer}\end{array}$$