Quiz 5

First Name: ....

Last Name: ....

Student Number: ....

Suppose that $[0, 1.5, 1]$ is the optimal solution of the following LP problem:

$$\min \ 4x_1 + 12x_2 + 18x_3$$

$$\text{subject to} \qquad x_1 + 3x_3 \geq 3$$
$$2x_2 + 2x_3 \geq 5$$
$$x_1, x_2, x_3 \geq 0$$

(a) Using the principle of complementary slackness and the duality theorem, Determine the optimal solution of the dual problem [4 points].

(b) Confirm the mentioned optimal solution via dual simplex method [4 points].

(c) If one constraint $x_2 + x_3 \leq 1$ is added to the LP problem in (b), find the optimal solution to the LP [2 points].