Math 414 Hw 12 Name _____Score____/20

Hw none from text. Recommended 119: 3, 5, 7. 130: 1, 3, 5.

In the next three problems, *x*, *y* are the initial or *old* basic variables, *u*, *v* are the parameters. After the new entering basic variable has been added and an old one has departed, we get the *new* set of basic variables. In each case the augmented matrix with objective row *z* is listed on the left. Circle the column of the entering basic variable. Circle the pivot entry in the row of the departing basic (if you have two or more choices, choose only one, not both). On the right, write the new tableau obtained by pivoting on the circled entry. The pivot point should never be in the objective row, never in the constant column and, for now, never on a negative entry.

1(5). Old tableau

	x	*y*	*u*	*v*	*b*	θ
x	1	0	-1	2	6	
y	0	1	2	3	0	
z	0	0	-2	3	0	

New tableau

	x	*y*	*u*	*v*	*b*
z					

List a variable, if any, which satisfies the given condition; write ∅ if there are none.

Entering basic variable. _____

Departing basic variable. _____

Degenerate old basic variable. _____

Degenerate new basic variable. _____

2(5). Old tableau

	x	*y*	*u*	*v*	*b*	θ
y	0	1	1	2	6	
x	1	0	-2	1	0	
z	0	0	-3	-4	0	

New tableau

	x	*y*	*u*	*v*	*b*
z					

List a variable which satisfies the given condition; write ∅ if there are none.

Entering basic variable. _____

Departing basic variable. _____

Degenerate old basic variable. _____

Degenerate new basic variable. _____

3(5). Old tableau

	x	*y*	*u*	*v*	*b*
x	1	0	0	2	6
y	0	1	-2	1	3
z	0	0	-3	-4	0

New tableau

	x	*y*	*u*	*v*	*b*
z					

List a variable which satisfies the given condition; write ∅ if there are none.

Entering basic variable. _____

Departing basic variable. _____

Degenerate old basic variable. _____

Degenerate new basic variable. _____

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Run the simplex algorithm with the slack variables *r*, *s*, *t* as the initial set of basic variables.

Note that in the initial matrix, one of the constant entries is negative. Correct this problem by multiplying by -1 and get Tableau 1.

In the tableaus, label the rows with the basic variables, mark the entering column, and circle the pivot point. In Tableau 1, list to θ ratios on the right.

4(5). Max $z = 5x+2y+u+v$

with r: $2x + y + u + 2v \le 6$

s: $-3x - u \ge -15$ Warning, slack is negative.

t: $5x + 4y + v \le 24$ $x, y, u, v \ge 0$

Initial

	x	*y*	*u*	*v*	*r*	*s*	*t*	*b*
z								

Tab 1

	x	*y*	*u*	*v*	*r*	*s*	*t*	*b*	θ
z									

Tab 2

	x	*y*	*u*	*v*	*r*	*s*	*t*	*b*
z								