Math 414 Hw 21 Name ____ Score____/11

1(5). Solve using the two phase method but <u>keep</u> the extra variable column for the extra variable s. This is because there is no slack variable for constraint s. Hence we need the extra variable (we'll call it s instead of s') to record the dual variables. Although the column is kept in order to record the dual variable s, otherwise ignore the column: do not pivot on any entry in the column and ignore negative entries in its objective row.

Check your answer with LinSolve; the last tableau should be all integers. Skip the two initial matrices, begin with the initial tableaus using the Objective Row Theorem.

max $z = 2x+y$
with
r: $-x+y \le 6$
s: $2x-y = 6$
$x, y \ge 0$.

Phase 1 Tab 1

	x	y	r	s	b
e					

Phase 1 Tab 2

	x	y	r	s	b
e					

Phase 2 Tab 1

	x	y	r	s	b
z					

Phase 2 Tab 2

	x	y	r	s	b

max $z =$ _____, when

PRIMAL:

$x =$ _____, $y =$ _____, with slack $r =$ _____.

DUAL:

$r =$ _____, $s =$ _____, slacks $x =$ _____, $y =$ _____.

A optimal solution is *unique* if all other optimal solutions have the same values, i.e., differ only w.r.t. which variables are basic.

For each of the following final tableaus either circle the word "unique optimal solution" or find a second optimal solution with different values. Circle the pivot entries which produce <u>new</u> solutions with different values. Assume x,y are primal and r,s are slacks.

2(2).

x	y	r	s	b
-2	0	1	-1	2
-1	1	0	1	0
0	0	0	1	0

FIRST OPTIMAL SOLUTION: max $z=0$, $x=0$, $y=0$.

unique optimal solution

second optimal solution
max $z =$ ____
$x =$ _____
$y =$ _____

3(2).

x	y	r	s	b
1	1	1	0	2
0	2	1	1	2
0	0	1	0	2

FIRST OPTIMAL SOLUTION: max $z=2$, $x=2$, $y=0$.

unique optimal solution

second optimal solution
max $z =$ ____
$x =$ _____
$y =$ _____

4(2).

x	y	r	s	b
0	2	1	1	2
1	1	1	0	2
0	1	1	0	2

FIRST OPTIMAL SOLUTION: max $z=2$, $x=2$, $y=0$.

unique optimal solution

second optimal solution
max $z =$ ____
$x =$ _____
$y =$ _____