

Name _____

SHOW AS MUCH WORK AS POSSIBLE BECAUSE YOU MAY RECEIVE PARTIAL CREDIT FOR THE WORK YOU DO IF YOUR ANSWER IS INCORRECT.

1. For the following initial simplex tableau:

	x_1	x_2	x_3	s_1	s_2	
s_1	5	1	3	1	0	30
s_2	-2	-1	-2	0	1	-24
P	-4	-2	-6	0	0	0

a. Write the nonstandard maximum problem that corresponds to the tableau.

Maximize	$P = 4x_1 + 2x_2 + 6x_3$
Subject to	$\begin{cases} 5x_1 + x_2 + 3x_3 \leq 30 \\ 2x_1 + x_2 + 2x_3 \geq 24 \\ x_1 \geq 0, x_2 \geq 0, x_3 \geq 0 \end{cases}$

b. Solve the problem using the two-stage method. Write out each tableau in the process and circle the pivot element or dual pivot element in each tableau. If the problem has a solution, state the values of x_1 , x_2 , x_3 , and P for the solution. If the problem does not have a solution, write "no solution."

	x_1	x_2	x_3	s_1	s_2	
s_1	5	1	3	1	0	30
s_2	-2	-1	-2	0	1	-24
P	-4	-2	-6	0	0	0

	x_1	x_2	x_3	s_1	s_2	
s_1	2	$-\frac{1}{2}$	0	1	$\frac{3}{2}$	-6
x_3	1	$\frac{1}{2}$	1	0	$-\frac{1}{2}$	12
P	2	1	0	0	-3	72

	x_1	x_2	x_3	s_1	s_2	
x_2	-4	1	0	-2	-3	12
x_3	3	0	1	1	1	6
P	6	0	0	2	0	60

$$x_1 = 0, x_2 = 12, x_3 = 6, \text{ and } P = 60$$