Math 414 Hw 28 Name ________________________________ Score____/19

Recommended 289: 1*, 2, 3, 4, 5. **text answer is wrong*

1(5) Convert to a programming problem involving integer and 0-1 variables.

You can convert it to a problem involving x, y, w and additional variables and constraints as was done in the lecture. Complete the answer on the right. Should be five new variables and four new constraints.

max $z = x+y+w$
with
$2x+y \le 20$
$2y+w \le 20$
$2w+x \le 20$

$x \in \{5, 7, 11\}$
$y \in \{1, 3, 5, 7, ...\}$ odds
$w \in \{0, 3, 6, 9, ...\}$
= {multiples of 3}.

Answer: max $z = x+y+w$
with
$2x+y \le 20$
$2y+w \le 20$
$2w+x \le 20$
and ...

Problem.
Max $z = y+4w$
with
r: $3x-6y+9w \le 9$
s: $3x+2y+w \le 7$
$x, y, w \in \mathbb{N}$

2(7) Solve the problem using the cutting plane method. Give the final tableau and the answer.

x	y	w	r	s	u	v	b

max $z = 10$, at $x = 0$, $y = 2$, $w = 2$.

3(7) Solve the problem using the branch and bound method.

Give the tree.

Select the 1st nonintegral variable to branch on rather than the one with the largest decimal part. Write the new constraints on the edges.

If a solution isn't integral, box it; if it is circle it; if it has no feasible solutions write ∅. Cross out nonoptimal nodes.

Should get 5-7 nodes with empty nodes included. The answer = the uncrossed-out circled solution.