Name: _____ Student ID: _____ Section: _____

Instructions. Grading is based on method. SHOW ALL WORK.

Submit solutions at the beginning of class on Monday.

1. (10 points) A local restaurant sent out 38 tablecloths to be laundered. Each tablecloth had zero or more stains from coffee (C), vinegar (V), grease (G), and pizza sauce (S) as indicated in the table below.

Stain	Count	Stain	Count
V	21	G	19
S	20	C	12
VC	6	VG	12
SG	10	CS	5
CG	7	VS	11
VCS	3	VCG	4
VGS	6	CSG	3

If two of the tablecloths had all 4 stains, answer the question below.

(a) How many tablecloths had no stains?

(b) How many tablecloths had exactly one stain?

2. (10 points) Find the number of nonnegative integer solutions to the equation below subject to the restrictions that follow.

$$x_1 + x_2 + x_3 = 30, \tag{1}$$

where $0 \leq x_1 \leq 9$, $3 \leq x_2 \leq 14$, and $0 \leq x_3 \leq 17$. EXPRESS YOUR ANSWER AS AN INTEGER.

Recall that the number of *nonnegative* integer solutions to (1) (without these restrictions) is given by the multichoose coefficient $\left(\!\binom{3}{30}\!\right)$.