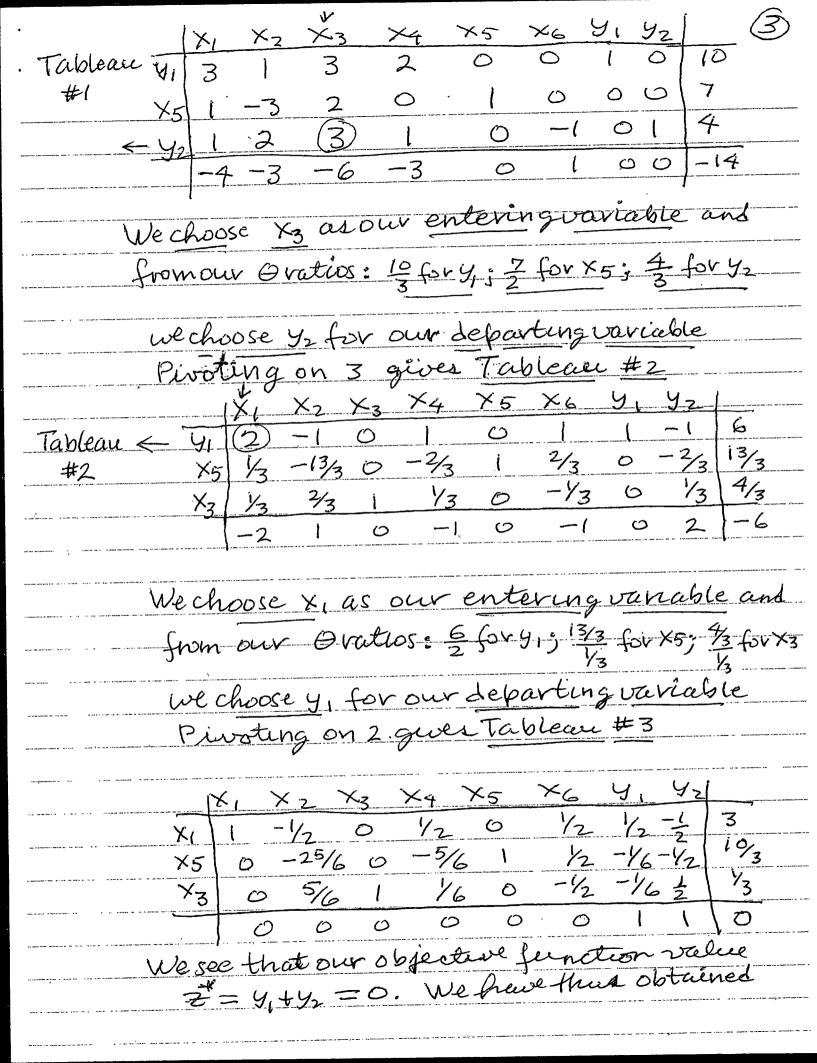
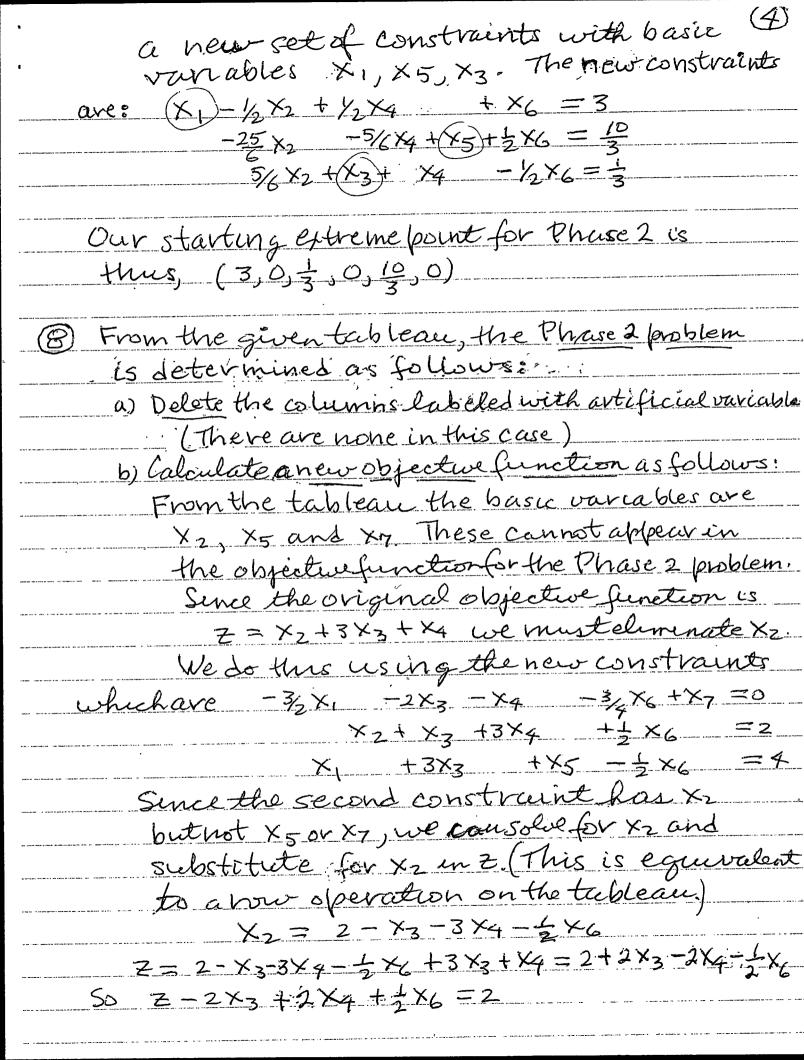
2) First, put in canonical form using slack variables: Maximize: Z = X, +2 X2 + X4 Subject to: x, + 3 x2 - x3 + x4 (x5) = 5 ×120, 4=1,2,..,5,6 Second, introduce artificial variables to formulate the Phase 1 problem: Minimize: Z'= 4,+42, or Maximize Z=-4,-42 Subject to: X1+3 ×2- ×3+×4+×5 =5 $\times_1 + 7 \times_2 + \times_3 \qquad - \times_6 + y_1 = 4$ $4x_1+2x_2+x_4+y_2=3$ X120;1=1,6,4,20,4220 The initial basic variables are X5, Y, Y2 Thirdly, Solvefor $y_1 = -x_1 - 7x_2 - x_3 + x_6 + 4$ and $y_2 = -4x_1 - 2x_2 - x_4 + 3$ Substitute into $z'+y_1+y_2=z''-5x_1-9x_2-x_3-x_4+x_6+7=0$ and get Z*-5×1-9×2-×3-×4+×6=-7 Fourthly, our initial sumplex tableau for Phase 1 is: X₁ X₂ X₃ X₄ X₅ X₆ Y₁ Y₂ X₅ 1 3 -1 1 1 0 0 0 5 Y₁ 1 7 1 0 0 -1 1 0 4 $\frac{y_2}{4200100001}$

If you didn't use x_5 as an initial artificial variable, you would have $2^* = y_1 + y_2 + y_3$ and get the tableau (6) First, put in canonical form using slack variables Maximize: Z = x, + x2+2x4 subject to: 3x, +x2+3x3+2x4. =10 $x_1 + 2x_2 + 3x_3 + x_4 + (x_6) = 4$ Second, introduce artificial variables to formulate the Phase 1 problem: Minimize: Z=y,+y2, ov, Maximize: Z=-y,-y2 Subject to: $3x_1 + x_2 + 3x_3 + 2x_4$ (+y₁) $x_{1} \ge 0, 4 = 1, -36$ $x_{1} - 2x_{2} + 2x_{3}$ $+x_{5}$ =10 $x_{1} \ge 0, 4 = 1, -36$ $x_{1} - 2x_{2} + 2x_{3}$ $+ x_{5}$ $y_{1} \ge 0, y_{2} \ge 0$ $x_{1} + 2x_{2} + 3x_{3} + x_{4}$ $-x_{6}$ $(+y_{2}) = 4$ (Note: Use X5 as an initial basic variable) Solve Constraints for y, and y2 $y_1 = -3x_1 - x_2 - 3x_3 - 2x_4 + 10$ $y_2 = -x_1-2x_2-3x_3-x_4+x_6+4$. Substitute $z^*+y+y_2 = z^*-4x_1-3x_2-6x_3-3x_4+x_6+14=0$ So 2*-4x1-3x2-6x3-3x4+x6 =-14 With this, our initial simplex tableau is





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5			΄ Ψ '×~	×4	×5	×6 ,	×7 ((5)
Tableau X7	$\frac{\chi_1}{-3}$	X ₂		-1				0	
#1 ×2		1		3			ſ	2	
< ×5	1	Ö	<u>(3</u>)) 1	-42	0 4		CALLETTE WARRIES OF THE STATE O
	10	0		7					
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b) We now apply the simplexmethod to determine									
the optimal solution									
We choose X3 as the entering variable and from									
the Ovatios: Offor X7; 2 for X2; 4 for X5 we									
choose x5 as the departing variable.									
Pivoting on 3, we get:									
	•		<u> </u>		×	XE	× ₆	× 7 (
	1		0	×3 0	-1		-13 -/2		8
	X2	-1/2	1	_			12 2/3		³ ² / ₃
	•			1	3	1/3		*	4/3
		2/3	,	0		2/3			14
		\/3					/ (Ġ.	·	13
Marso Mantino Dan and Land III Istino									
We see that we have obtained the optimal									
Solution $(0, \frac{2}{3}, \frac{4}{3}, 0, 0, 0, \frac{8}{3})$ The obtimal value for the objective function we see is $2 = \frac{14}{3}$									
The optimal value for the objective function									
$\frac{\text{we see is } 2 = \frac{1}{3}}{3}$									
1110 11000 11000 11000 11000 1									
Note: we began with me extreme pour									
Note: We began with the extreme (point (0,2,0,0,4,0)									
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