

SHOW ALL WORK AND JUSTIFY ALL ANSWERS.

1. Suppose we obtained the following corner points for the bounded feasible set of a system of equations:  $A(1,3)$ ,  $B(3,5)$ ,  $C(6,4)$ , and  $D(4,1)$ . Minimize the objective function:  $C = 18x + 12y$ .

C P	Obj fun
$A(1,3)$	$\text{Min } C = 18x + 12y$ $18(1) + 12(3) = 54$
$B(3,5)$	$18(3) + 12(5) = 114$
$C(6,4)$	$18(6) + 12(4) = 156$
$D(4,1)$	$18(4) + 12(1) = 84$

Min of 54 occurs  
when  $x=1$ ,  $y=3$

2. For the following simplex tableaus: if it is a final tableau, write the value of each variable; if more steps are required, circle the next pivot element; if there is no solution, write no solution.

(a)

$x$	$y$	$s_1$	$s_2$	$s_3$	$P$	constant
1	0	0	2	$\frac{2}{7}$	0	300
0	0	1	$\frac{1}{7}$	$-\frac{3}{7}$	0	100
0	1	0	1	$\frac{3}{7}$	0	80
						500

$x = 300$   
 $s_1 = 100$   
 $y = 80$   
 $P = 500$

$x = 300$     $z = 0$     $s_2 = 0$   
 $y = 80$     $s_1 = 100$     $s_3 = 0$   
 $P = 500$

(b)

$x$	$y$	$s_1$	$s_2$	$P$	constant
3	$\frac{1}{2}$	1	0	0	2
1	1	0	1	0	3
-5	-8	0	0	1	0

$\frac{2}{1/2} = 4$   
 $\frac{3}{1} = 3 < 4$  ← pr

↑  
 PC