

1.] Consider the following LP below:

$$x_1, x_2, x_3, x_4 \geq 0$$

[illegible]

Row	Basic	$z$	$x_1$	$x_2$	$x_3$	$x_4$	$s_1$	$s_2$	$s_3$	RHS	
0	$z$	1	3	-1	6	0	0	0	0	0	
1	$s_1$	0	9	<span style="border: 1px solid red;">1</span>	-9	-2	1	0	0	0	$x_1 = 0 \leftarrow$
2	$s_2$	0	1	$\frac{1}{3}$	-2	$-\frac{1}{3}$	0	1	0	0	$x_3 = 0 \leftarrow$
3	$s_3$	0	-9	-1	9	2	0	0	1	1	$x_1 = 0 \leftarrow$
Row	Basic	$z$	$x_1$	$x_2$	$x_3$	$x_4$	$s_1$	$s_2$	$s_3$	RHS	
0'	$z$	1	12	0	-3	-2	1	0	0	0	
1'	$x_2$	0	9	1	-9	-2	1	0	0	0	$x_4 = 0 \leftarrow$
2'	$s_2$	0	-2	0	<span style="border: 1px solid red;">1</span>	$\frac{1}{3}$	$-\frac{1}{3}$	1	0	0	$x_1 = 0 \leftarrow$
3'	$s_3$	0	0	0	0	0	1	0	1	1	$x_0 = 0 \leftarrow$
Row	Basic	$z$	$x_1$	$x_2$	$x_3$	$x_4$	$s_1$	$s_2$	$s_3$	RHS	
0''	$z$	1	6	0	0	-1	0	3	0	0	
1''	$x_2$	0	-9	1	0	<span style="border: 1px solid red;">1</span>	-2	9	0	0	$x_1 = 0 \leftarrow$
2''	$x_3$	0	-2	0	1	$\frac{1}{3}$	$-\frac{1}{3}$	1	0	0	$x_3 = 0 \leftarrow$
3''	$s_3$	0	0	0	0	0	1	0	1	1	$x_0 = 0 \leftarrow$
Row	Basic	$z$	$x_1$	$x_2$	$x_3$	$x_4$	$s_1$	$s_2$	$s_3$	RHS	
0'''	$z$	1	-3	1	0	0	-2	12	0	0	
1'''	$x_4$	0	-9	1	0	1	-2	9	0	0	$x_4 = 0 \leftarrow$
2'''	$x_3$	0	<span style="border: 1px solid red;">1</span>	$-\frac{1}{3}$	1	0	$\frac{1}{3}$	-2	0	0	$x_1 = 0 \leftarrow$
3'''	$s_3$	0	0	0	0	0	1	0	1	1	$x_0 = 0 \leftarrow$
Row	Basic	$z$	$x_1$	$x_2$	$x_3$	$x_4$	$s_1$	$s_2$	$s_3$	RHS	
0''''	$z$	1	0	0	3	0	-1	6	0	0	
1''''	$x_4$	0	0	-2	9	1	<span style="border: 1px solid red;">1</span>	-9	0	0	$x_1 = 0 \leftarrow$
2''''	$x_1$	0	1	$-\frac{1}{3}$	1	0	$\frac{1}{3}$	-2	0	0	$x_3 = 0 \leftarrow$
3''''	$s_3$	0	0	0	0	0	1	0	1	1	$x_1 = 1 \leftarrow$
Row	Basic	$z$	$x_1$	$x_2$	$x_3$	$x_4$	$s_1$	$s_2$	$s_3$	RHS	
0'''''	$z$	1	0	-2	12	1	0	-3	0	0	
1'''''	$s_1$	0	0	-2	9	1	1	-9	0	0	$x_4 = 0 \leftarrow$
2'''''	$x_1$	0	1	$\frac{1}{3}$	-2	$-\frac{1}{3}$	0	<span style="border: 1px solid red;">1</span>	0	0	$x_1 = 0 \leftarrow$
3'''''	$s_3$	0	0	2	-9	-1	0	9	1	1	$\frac{1}{9} \leftarrow$
Row	Basic	$z$	$x_1$	$x_2$	$x_3$	$x_4$	$s_1$	$s_2$	$s_3$	RHS	
0''''''	$z$	1	3	-1	6	0	0	0	0	0	
1''''''	$s_1$	0	9	1	-9	-2	1	0	0	0	
2''''''	$s_2$	0	1	$\frac{1}{3}$	-2	$-\frac{1}{3}$	0	1	0	0	
3''''''	$s_3$	0	-9	-1	9	2	0	0	1	1	