Q Using big - M Method solve

$$\max(Z) = -x_1 - x_2 - x_3 \quad s.t$$
$$x_1 - x_2 + 2x_3 = 2$$
$$-x_1 + 2x_2 - x_3 = 1$$
$$x_1, x_2, x_3 \geq 0$$

Sol $\max(Z) = -x_1 - x_2 - x_3 - m \cdot x_4 - m \cdot x_5$

s.t,

$$x_1 - x_2 + 2x_3 + x_4 = 2$$
$$-x_1 + 2x_2 - x_3 + x_5 = 1$$
$$x_1, x_2, x_3, x_4, x_5 \geq 0$$

C_j			-1	-1	-1	-m	-m		b/a2	
C_B	B	X_B	b	a_1	a_2	a_3	a_4	a_5	min ratio	operation
-m	a_4	x_4	2	1	-1	2	1	0	X	
-m	a_5	x_5	1	-1	2	-1	0	1	1/2	
	$Z_j - C_j$			1	-m	-m	0	0		
					+1	+1			b/a3	
-m	a_4	x_4	5/2	1/2	0	3/2	1		5/3	$R_1' \leftarrow R_1 + R_2'$
-1	a_2	x_2	1/2	-1/2	1	-1/2	0		X	$R_2' \leftarrow R_2/2$
	$Z_j - C_j$			-1/2 m	0	-1/2 m	0			
				-1/2		-1/2				
-1	a_3	x_3	5/3	1/3	0	1				$R_1' \leftarrow R_1 \times 2/3$
-1	a_2	x_2	4/3	-1/3	1	0				$R_2' \leftarrow R_1 + 1/2 R_1'$
	$Z_j - C_j$		-3	1	0	0				

$\therefore$ all $Z_j - C_j \geq 0$ optimal solution is obtained

$Z = -3 \quad x_1 = 0 \quad x_2 = 0 \quad x_3 = 5/3$