[PRACTICE]

— BASIC SOLUTIONS [TYPE 1]

(1) $Z = x_1 - 2x_2 + 4x_3$

SUB, $x_1 + 2x_2 + 3x_3 = 7$

$3x_1 + 4x_2 + 6x_3 = 15$

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

BASIC VAR	NON VAR	EQUATION	FEASIBLE	DEGEN	VALUE OF Z	OPTIMAL
x_1, x_2	$x_3 = 0$	$x_1 + 2x_2 = 7$ $3x_1 + 4x_2 = 15$ $x_1 = 1, x_2 = 3$	Y	N	-5	N
x_1, x_3	$x_2 = 0$	$x_1 + 3x_3 = 7$ $3x_1 + 6x_3 = 15$ $x_1 = 1, x_3 = 2$	Y	N	9	Y
x_2, x_3	$x_1 = 0$	$2x_2 + 3x_3 = 7$ $4x_2 + 6x_3 = 15$ UNBOUNDED SOLUTION	-	-	-	-

(3) $Z = 2x_1 - 2x_2 + 4x_3 - 5x_4$

SUB, $x_1 + 4x_2 - 2x_3 + 8x_4 \leq 2$

$-x_1 + 2x_2 + 3x_3 + 4x_4 \leq 1$

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

BASIC VAR.	NON BASIC VAR.	EQUATION	FEASIBLE	DEGENERA	VALUE	OPTIMAL
x_1	$x_3 = 0$	$x_1 + 4x_2 = 2$				
x_2	$x_4 = 0$	$-x_1 + 2x_2 = 1$	Y	Y	-1	N
		$x_1 = 0, x_2 = 1/2$				
x_1	$x_2 = 0$	$x_1 + \#\ -2x_3 = 2$				
x_3	$x_4 = 0$	$-x_1 + 3x_3 = 1$	Y	N	28	Y
		$x_1 = 8, x_3 = 3$				
x_1	$x_2 = 0$	$x_1 + 8x_4 = 2$				
x_4	$x_3 = 0$	$-x_1 + 4x_4 = 1$	Y	Y	$\frac{-5}{4}$	N
		$x_1 = 0, x_4 = 1/4$				
x_2	$x_1 = 0$	$4x_2 - 2x_3 = 2$				
x_3	$x_4 = 0$	$2x_2 + 3x_3 = 1$	Y	Y	-1	N
		$x_2 = 1/2, x_3 = 0$				
x_2	$x_1 = 0$	$4x_2 + 8x_4 = 2$				
x_4	$x_3 = 0$	$2x_2 + 4x_4 = 1$	—	—	—	—
		$x_2 = ?, x_4 = ?$				
x_3	$x_1 = 0$	$-2x_3 + 8x_4 = 2$	Y	Y	$\frac{-5}{4}$	N
x_4	$x_2 = 0$	$3x_3 + 4x_4 = 1$ $x_3 = 0$ $x_4 = 1/4$				