Simplex method using 3 variables

- Minimize the following:

$$z = x_1 - 3x_2 + 2x_3$$

w.r.t:

$$3x_1 - x_2 + 3x_3 \leq 7$$

$$-2x_1 + 4x_2 \leq 12$$

$$-4x_1 + 3x_2 + 8x_3 \leq 10$$

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

In [1]:
```
from scipy.optimize import linprog

obj = [1, -3, 2]

lhs_ineq = [[3, -1, 3],
            [-2, 4, 0],
            [-4, 3, 8]]

rhs_ineq = [7,
            12,
            10]

bound = [(0, float("inf")),
         (0, float("inf")),
         (0, float("inf"))]
```

In [2]:
```
z = linprog(c = obj, A_ub = lhs_ineq, b_ub = rhs_ineq,
            bounds = bound, method = "revised simplex")

z
```

Out[2]:
```
     con: array([], dtype=float64)
     fun: -11.0
 message: 'Optimization terminated successfully.'
     nit: 2
   slack: array([ 0.,  0., 11.])
  status: 0
 success: True
       x: array([4., 5., 0.])
```

In [ ]: