

Q.) 4.4. Bonus: Yes, the solution will be same because -

Now, from condition b), complementary slackness, we had -

$$Q_1^2 + 4Q_2^2 - 4 = 0 \quad \text{--- (1)}$$

$$Q_1^2 + 4Q_2^2 = 4$$

$$\frac{Q_1^2}{4} + Q_2^2 = 1$$

$$\frac{Q_1^2}{2^2} + \frac{Q_2^2}{1^2} = 1 \quad \text{--- (2)}$$

from (2), we can see that (1) is its rearrangement or vice-versa.

Hence, the solution will be same for the equality constraint  $\frac{Q_1^2}{2^2} + \frac{Q_2^2}{1^2} = 1$  because it can be reduced

to the complementary slackness condition for the given minimization problem.