

4.3.) Solve the Optimization Problem :-

Now, from the condition a) Stationary condition,

$$[1 + 2\lambda\theta_1, 2 + 8\lambda\theta_2] = 0$$

$$\therefore 1 + 2\lambda\theta_1 = 0$$

$$\lambda = \frac{-1}{2\theta_1} \text{ ————— } \textcircled{1}$$

Using the second equation -

$$2 + 8\lambda\theta_2 = 0$$

to find relation between θ_1 & θ_2 -
using λ from $\textcircled{1}$.

$$2 + 8\left(\frac{-1}{2\theta_1}\right) \cdot \theta_2 = 0$$

$$1 + 4\left(\frac{-1}{2\theta_1}\right) \cdot \theta_2 = 0$$

$$2\theta_1 = 4\theta_2$$

$$\boxed{\theta_1 = 2\theta_2} \text{ ————— } \textcircled{2}$$