General Solution of Square of Trigonometrical Equations.

(1) **General solution of $\sin^2\theta = \sin^2\alpha$:** If $\sin^2\theta = \sin^2\alpha$ or, $2\sin^2\theta = 2\sin^2\alpha$ (Both the sides multiply by 2) or, $1 - \cos 2\theta = 1 - \cos 2\alpha$ or, $\cos 2\theta = \cos 2\alpha$, $2\theta = 2n\pi \pm 2\alpha;\ n \in I$,

$\boxed{\theta = n\pi \pm \alpha;\ n \in I}$

(2) **General solution of $\cos^2\theta = \cos^2\alpha$:** If $\cos^2\theta = \cos^2\alpha$ or, $2\cos^2\theta = 2\cos^2\alpha$ (multiply both the side by 2) or, $1 + \cos 2\theta = 1 + \cos 2\alpha$ or, $2\theta = 2n\pi \pm 2\alpha$; $\boxed{\theta = n\pi \pm \alpha;\ n \in I}$

(3) **General solution of $\tan^2\theta = \tan^2\alpha$**: If $\tan^2\theta = \tan^2\alpha$ or, $\frac{\tan^2\theta}{1} = \frac{\tan^2\alpha}{1}$

Using componendo and dividendo rule, $\frac{\tan^2\theta + 1}{\tan^2\theta - 1} = \frac{\tan^2\alpha + 1}{\tan^2\alpha - 1}$

or $\frac{1 + \tan^2\theta}{1 - \tan^2\theta} = \frac{1 + \tan^2\alpha}{1 - \tan^2\alpha}$ or $\frac{1 - \tan^2\theta}{1 + \tan^2\theta} = \frac{1 - \tan^2\alpha}{1 + \tan^2\alpha}$ or $\cos 2\theta = \cos 2\alpha$, $\boxed{\theta = n\pi \pm \alpha;\ n \in I}$