5 (x) $\dfrac{1+\tan^2 A}{1+\cot^2 A}$

$= \dfrac{\sec^2 A}{\operatorname{cosec}^2 A}$

$= \dfrac{\frac{1}{\cos^2 A}}{\frac{1}{\sin^2 A}}$

$= \dfrac{1}{\cos^2 A} \times \dfrac{\sin^2 A}{1}$

$= \tan^2 A$

$\left(\dfrac{1-\tan A}{1-\cot A}\right)^2$

$= \left(\dfrac{1-\tan A}{1-\frac{1}{\tan A}}\right)^2$

$= \left(\dfrac{1-\tan A}{\frac{\tan A - 1}{\tan A}}\right)^2$

$= \dfrac{(1-\tan A)^2 \tan^2 A}{(\tan A - 1)^2}$

$= \tan^2 A$

$\therefore \quad \dfrac{1+\tan^2 A}{1+\cot^2 A} = \left(\dfrac{1-\tan A}{1-\cot A}\right)^2 = \tan^2 A$