

QUIZ REVIEW

$$\begin{aligned}
 1) \quad \csc^2 x - \cos^2 x \csc^2 x &= 1 \\
 \csc^2 x (1 - \cos^2 x) &= 1 \\
 \csc^2 x (\sin^2 x) &= 1 \\
 \boxed{1} &= \boxed{1}
 \end{aligned}$$

$$\begin{aligned}
 2) \quad \cos^2 x - \sin^2 x &= 2\cos^2 x - 1 \\
 \cos^2 x - (1 - \cos^2 x) &= 2\cos^2 x - 1 \\
 \cos^2 x - 1 + \cos^2 x &= 2\cos^2 x - 1 \\
 \boxed{2\cos^2 x - 1} &= \boxed{2\cos^2 x - 1}
 \end{aligned}$$

$$\begin{aligned}
 3) \quad \frac{\cot x}{1 + \cot^2 x} &= \sin x \cos x \\
 \frac{\cot x}{\csc^2 x} &= \sin x \cos x \\
 \frac{\cos x}{\sin x} &= \sin x \cos x \\
 \frac{1}{\sin^2 x} &= \sin x \cos x
 \end{aligned}$$

$$\frac{\cos x}{\sin x} \cdot \frac{\sin^2 x}{1} = \sin x \cos x$$

$$\boxed{\cos x \sin x = \sin x \cos x}$$

$$\begin{aligned}
 4) \quad \frac{\sin x + \cos x}{\sin x \cos x} &= \sec x + \csc x \\
 \frac{\sin x}{\sin x \cos x} + \frac{\cos x}{\sin x \cos x} &= \sec x + \csc x \\
 \frac{1}{\cos x} + \frac{1}{\sin x} &= \sec x + \csc x \\
 \boxed{\sec x + \csc x} &= \boxed{\sec x + \csc x}
 \end{aligned}$$

$$b) \quad \sin x \left(\frac{\cot x}{\sec x} + \csc x \right) = \cos^2 x + 1$$

$$\frac{\sin x}{1} \left(\frac{\frac{\cos x}{\sin x}}{\frac{1}{\cos x}} + \frac{1}{\sin x} \right) = \cos^2 x + 1$$

$$\frac{\sin x}{1} \left(\frac{\cos^2 x}{\sin x} + \frac{1}{\sin x} \right) = \cos^2 x + 1$$

$$\boxed{\cos^2 x + 1 = \cos^2 x + 1}$$

$$\begin{aligned}
 5) \quad \csc x \cos^2 x + \sin x &= \csc x \\
 \left(\frac{1}{\sin x} \right) \left(\frac{\cos^2 x}{1} \right) + \frac{\sin x}{1} &= \csc x \\
 \frac{\cos^2 x}{\sin x} + \frac{\sin^2 x}{\sin x} &= \csc x
 \end{aligned}$$

$$\frac{\cos^2 x + \sin^2 x}{\sin x} = \csc x$$

$$\frac{1}{\sin x} = \csc x$$

$$\boxed{\csc x = \csc x}$$

$$\begin{aligned}
 7) \quad \csc x - \sin x &= \cot x \cos x \\
 \frac{1}{\sin x} - \frac{\sin x}{1} &= \cot x \cos x
 \end{aligned}$$

$$\frac{1 - \sin^2 x}{\sin x} = \cot x \cos x$$

$$\frac{\cos^2 x}{\sin x} = \cot x \cos x$$

$$\boxed{\cot x \cos x = \cot x \cos x}$$

$$8) \frac{\cos x + \tan x}{\sin x} = \sec x + \cot x$$

$$\frac{\frac{\cos x}{1} + \frac{\sin x}{\cos x}}{\sin x} = \sec x + \cot x$$

$$\frac{\cos^2 x + \sin x}{\cos x \sin x} = \sec x + \cot x$$

$$\frac{\cos^2 x + \sin x}{\cos x} \cdot \frac{1}{\sin x} = \sec x + \cot x$$

$$\frac{\cos^2 x + \sin x}{\sin x \cos x} = \sec x + \cot x$$

$$\frac{\cos^2 x}{\sin x \cos x} + \frac{\sin x}{\sin x \cos x} = \sec x + \cot x$$

$$\frac{\cos x}{\sin x} + \frac{1}{\cos x} = \sec x + \cot x$$

$$\cot x + \sec x = \sec x + \cot x$$

$$9) \frac{1}{\sec x - \tan x} = \sec x + \tan x$$

$$\frac{1}{\sec x - \tan x} \left(\frac{\sec x + \tan x}{\sec x + \tan x} \right) = \sec x + \tan x$$

$$\frac{\sec x + \tan x}{\sec^2 x - \tan^2 x} = \sec x + \tan x$$

$$\frac{\sec x + \tan x}{1} = \sec x + \tan x$$

$$\sec x + \tan x = \sec x + \tan x$$

$$10) 1 + \cos x = \cot x (\sin x + \tan x)$$

$$1 + \cos x = \frac{\cos x}{\sin x} \left(\frac{\sin x}{1} + \frac{\sin x}{\cos x} \right)$$

$$1 + \cos x = \cos x + 1$$