

#45

$$\underline{\tan^2 x} - \underline{\tan^2 x \sin^2 x}$$

$$\tan^2 x (1 - \sin^2 x)$$

$$\tan^2 x (\cos^2 x)$$

$$\frac{\sin^2 x}{\cancel{\cos^2 x}} \quad \frac{\cancel{\cos^2 x}}{\cancel{\cos^2 x}}$$

$$\sin^2 x$$

$$a^2 - a^2 b^2$$

$$a^2(1 - b^2)$$

#48

$$\cos^2 x + \cos^2 x \tan^2 x$$

$$\cos^2 x (1 + \tan^2 x)$$

$$\cos^2 x (\sec^2 x)$$

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

#50

$$\frac{\cos^2 x - 4}{\cos x - 2} = \frac{(\cos x - 2)(\cos x + 2)}{\cos x - 2}$$

$$= \cos x + 2$$

#51

$$\begin{aligned} &x^4 + 2x^2 + 1 \\ &(x^2 + 1)(x^2 + 1) \end{aligned}$$

$$\begin{aligned} &\tan^4 x + 2\tan^2 x + 1 \\ &(\tan^2 x + 1)(\tan^2 x + 1) \end{aligned}$$

$$\sec^2 x \cdot \sec^2 x$$

$$\sec^4 x$$

#52

$$1 - 2\cos^2 x + \cos^4 x$$

$$\#53 \quad \frac{\sin^4 x - \cos^4 x}{\sin^2 x - \cos^2 x} \left(\frac{\sin^2 x + \cos^2 x}{=1} \right)$$
$$\sin^2 x - \cos^2 x$$

$$(a+b)^2 = (a+b)(a+b) = a^2 + 2ab + b^2$$

$$(x+y)(x-y) = x^2 - y^2$$

$$(a-b)^2 = (a-b)(a-b) = a^2 - 2ab + b^2$$

$$\# 55 \left(\csc^3 x - \csc^2 x \right) (\csc x + 1)$$

$$\csc^2 x (\csc x - 1) - 1 (\csc x - 1)$$

$$(\csc x - 1) (\csc^2 x - 1)$$

$$(\csc x - 1) (\sec x - 1) (\csc x + 1)$$

$$(\csc x - 1) (\cot^2 x)$$