1. ਸਿੱਧ ਕਰੋ : $\dfrac{\sin\theta - 2\sin^3\theta}{2\cos^3\theta - \cos\theta} = \tan\theta$

ਹੱਲ: ਖੱਬਾ ਪਾਸਾ : $\dfrac{\sin\theta - 2\sin^3\theta}{2\cos^3\theta - \cos\theta} = \dfrac{\sin\theta(1 - 2\sin^2\theta)}{\cos\theta(2\cos^2\theta - 1)}$

$= \tan\theta \dfrac{[1 - 2(1 - \cos^2\theta)]}{(2\cos^2\theta - 1)} = \tan\theta \left[\dfrac{1 - 2 + 2\cos^2\theta}{2\cos^2\theta - 1}\right]$

$= \tan\theta \left[\dfrac{2\cos^2\theta - 1}{2\cos^2\theta - 1}\right] = \tan\theta$

2. ਸਿੱਧ ਕਰੋ : $\dfrac{1 + \sec A}{\sec A} = \dfrac{\sin^2 A}{1 - \cos A}$

ਹੱਲ: ਖੱਬਾ ਪਾਸਾ : $\dfrac{1 + \sec A}{\sec A} = \dfrac{1 + \dfrac{1}{\cos A}}{\dfrac{1}{\cos A}}$

$= \dfrac{\dfrac{\cos A + 1}{\cos A}}{\dfrac{1}{\cos A}} = \dfrac{\cos A + 1}{\cos A} \times \dfrac{\cos A}{1} = 1 + \cos A$

ਸੱਜਾ ਪਾਸਾ : $\dfrac{\sin^2 A}{1 - \cos A} = \dfrac{1^2 - \cos^2 A}{1 - \cos A} = \dfrac{(1 - \cos A)(1 + \cos A)}{1 - \cos A} = 1 + \cos A$

ਖੱਬਾ ਪਾਸਾ = ਸੱਜਾ ਪਾਸਾ

3. ਸਿੱਧ ਕਰੋ : $(\operatorname{cosec}A - \sin A)(\sec A - \cos A) = \dfrac{1}{\tan A + \cot A}$

ਹੱਲ: ਖੱਬਾ ਪਾਸਾ : $(\operatorname{cosec}A - \sin A)(\sec A - \cos A)$

$= \left(\dfrac{1}{\sin A} - \dfrac{\sin A}{1}\right)\left(\dfrac{1}{\cos A} - \dfrac{\cos A}{1}\right)$

$= \left(\dfrac{1 - \sin^2 A}{\sin A}\right)\left(\dfrac{1 - \cos^2 A}{\cos A}\right) = \dfrac{\cos^2 A}{\sin A} \cdot \dfrac{\sin^2 A}{\cos A} = \sin A.\cos A$

ਸੱਜਾ ਪਾਸਾ : $\dfrac{1}{\tan A + \cot A} = \dfrac{1}{\dfrac{\sin A}{\cos A} + \dfrac{\cos A}{\sin A}} = \dfrac{1}{\dfrac{\sin^2 A + \cos^2 A}{\sin A.\cos A}} = \sin A.\cos A$

ਖੱਬਾ ਪਾਸਾ = ਸੱਜਾ ਪਾਸਾ

4. ਸਿੱਧ ਕਰੋ : $(\sin A + \operatorname{cosec}A)^2 + (\cos A + \sec A)^2 = 7 + \tan^2 A + \cot^2 A$

ਹੱਲ: ਖੱਬਾ ਪਾਸਾ :

$(\sin A + \operatorname{cosec}A)^2 + (\cos A + \sec A)^2$

$= (\sin^2 A + \operatorname{cosec}^2 A + 2\sin A.\operatorname{cosec}A) + (\cos^2 A + \sec^2 A + 2\cos A.\sec A)$

$= \sin^2 A + \operatorname{cosec}^2 A + 2\sin A.\dfrac{1}{\sin A} + \cos^2 A + \sec^2 A + 2.\cos A.\dfrac{1}{\cos A}$

$= (\sin^2 A + \cos^2 A) + 2 + \operatorname{cosec}^2 A + \sec^2 A + 2$

$$= 1 + 2 + 2 + (1 + \cot^2 A) + (1 + \tan^2 A)$$
$$= 7 + \cot^2 A + \tan^2 A = \text{ਸੱਜਾ ਪਾਸਾ}$$

5. ਸਿੱਧ ਕਰੋ : $\dfrac{\tan\theta}{1-\cot\theta} + \dfrac{\cot\theta}{1-\tan\theta} = 1 + \tan\theta + \cot\theta$

ਹੱਲ: ਖੱਬਾ ਪਾਸਾ :

$$\frac{\tan\theta}{1-\cot\theta} + \frac{\cot\theta}{1-\tan\theta} = \frac{\tan\theta}{1-\frac{1}{\tan\theta}} + \frac{\frac{1}{\tan\theta}}{1-\tan\theta}$$

$$= \frac{\tan^2\theta}{\tan\theta-1} + \frac{\tan\theta}{\tan\theta(1-\tan\theta)} = \frac{\tan^2\theta}{\tan\theta-1} - \frac{1}{\tan\theta(\tan\theta-1)}$$

$$= \frac{1}{\tan\theta-1}\left[\frac{\tan^3\theta-1}{\tan\theta}\right] = \frac{1}{\tan\theta-1}\left[\frac{(\tan\theta-1)(\tan^2\theta+1+\tan\theta)}{\tan\theta}\right]$$

$$= \frac{\tan^2\theta+1+\tan\theta}{\tan\theta} = \frac{\tan^2\theta}{\tan\theta} + \frac{1}{\tan\theta} + \frac{\tan\theta}{\tan\theta}$$

$$= \tan\theta + \cot\theta + 1 = \text{ਸੱਜਾ ਪਾਸਾ}$$

6. ਸਿੱਧ ਕਰੋ : $\dfrac{\sin A - \cos A + 1}{\sin A + \cos A - 1} = \dfrac{1}{\sec A - \tan A}$

ਹੱਲ: ਖੱਬਾ ਪਾਸਾ : $\dfrac{\sin A - \cos A + 1}{\sin A + \cos A - 1}$

(ਸੱਜੇ ਪਾਸੇ $\sec A$ ਅਤੇ $\tan A$ ਦੀ ਜ਼ਰੂਰਤ ਹੋਣ ਕਾਰਨ ਇਸਦੇ ਅੰਸ਼ ਅਤੇ ਹਰ ਨੂੰ $\cos A$ ਨਾਲ ਵੰਡਿਆ ਜਾਵੇ)

$$= \frac{\frac{\sin A}{\cos A} - \frac{\cos A}{\cos A} + \frac{1}{\cos A}}{\frac{\sin A}{\cos A} + \frac{\cos A}{\cos A} - \frac{1}{\cos A}} = \frac{\tan A - 1 + \sec A}{\tan A + 1 - \sec A}$$

$$= \frac{\tan A + \sec A - 1}{\tan A - \sec A + (\sec^2 A - \tan^2 A)}$$

$$= \frac{\tan A + \sec A - 1}{\tan A - \sec A + [(\sec A - \tan A)(\sec A + \tan A)]}$$

$$= \frac{\tan A + \sec A - 1}{(\sec A - \tan A)[-1 + (\sec A + \tan A)]}$$

$$= \frac{\tan A + \sec A - 1}{(\sec A - \tan A)(\tan A + \sec A - 1)} = \frac{1}{\sec A - \tan A}$$