ex 8.3 exemplar problems.

① LHS

$$= \frac{\sin\theta}{1+\cos\theta} + \frac{1+\cos\theta}{\sin\theta}$$

$$= \frac{\sin^2\theta + (1+\cos\theta)^2}{\sin\theta(1+\cos\theta)}$$

$$= \frac{\sin^2\theta + 1 + \cos^2\theta + 2\cos\theta}{\sin\theta(1+\cos\theta)}$$

$$= \frac{1+1+2\cos\theta}{\sin\theta(1+\cos\theta)}$$

$$= \frac{2+2\cos\theta}{\sin\theta(1+\cos\theta)}$$

$$= \frac{2(1+\cos\theta)}{\sin\theta(1+\cos\theta)}$$

$$= 2\operatorname{cosec}\theta$$

$$= RHS$$

② LHS

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

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

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

$$= \tan A\,(-2\sec A)$$

$$= \frac{2\sec A}{\tan A}$$

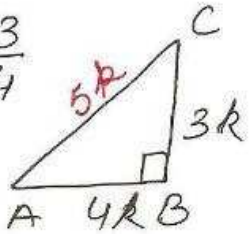
$$= \frac{2}{\cos A \times \frac{\sin A}{\cos A}}$$

$$= 2\operatorname{cosec} A$$

$$= RHS$$

③ $\tan A = \frac{3}{4}$

let $AB = 4k$, $BC = 3k$



$$AC = \sqrt{16k^2 + 9k^2}$$

$$= \sqrt{25k^2}$$

$$= 5k$$

$$LHS = \sin A \cos A$$

$$= \frac{3k}{5k} \times \frac{4k}{5k}$$

$$= \frac{12}{25}$$

$$= RHS$$