Warm Up

Prove the following identities:

$$\tan\theta + \tan^3\theta = \frac{1}{\cot\theta\cos^2\theta}$$

C.F.

$\tan\theta(1+\tan^2\theta)$

$\tan\theta\sec^2\theta$

$\left(\frac{1}{\cot\theta}\right)\left(\frac{1}{\cos^2\theta}\right)$

$\tan\theta\sec^2\theta$

$$\tan\theta + \tan^3\theta = \frac{1}{\cot\theta\cos^2\theta}$$

C.F.

$\tan\theta(1+\tan^2\theta)$

$\tan\theta\sec^2\theta$

$\left(\frac{\sin\theta}{\cos\theta}\right)\left(\frac{1}{\cos^2\theta}\right)$

$\frac{\sin\theta}{\cos^3\theta}$

$\frac{1}{\left(\frac{\cos\theta}{\sin\theta}\right)\cos^2\theta}$

$1 \div \frac{\cos^3\theta}{\sin\theta}$

$\frac{\sin\theta}{\cos^3\theta}$

Questions from homework

⑥ $\sin^2\theta + 2\cos^2\theta - 1 = \cos^2\theta$

$1 - \cos^2\theta + 2\cos^2\theta - 1$

$\cos^2\theta$

⑦ $\sec^2\theta - \sin^2\theta = \cos^2\theta + \tan^2\theta$

$1 - \sin^2\theta + \sec^2\theta - 1$

$\sec^2\theta - \sin^2\theta$

⑨ $\tan^2\theta - \sin^2\theta = \sin^2\theta\tan^2\theta$

$\frac{\sin^2\theta}{\cos^2\theta} - \frac{\sin^2\theta}{1}$

$\frac{\sin^2\theta}{\cos^2\theta} - \frac{\sin^2\theta\cos^2\theta}{\cos^2\theta}$

$\frac{\sin^2\theta - \sin^2\theta\cos^2\theta}{\cos^2\theta}$

C.F.

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

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

$\frac{\sin^4\theta}{\cos^2\theta}$

$\frac{\sin^2\theta}{1}\left(\frac{\sin^2\theta}{\cos^2\theta}\right)$

$\frac{\sin^4\theta}{\cos^2\theta}$

Questions from homework

(10) $(\sin\theta + \cos\theta)^2 = 1 + 2\sin\theta\cos\theta$

$(\sin\theta+\cos\theta)(\sin\theta+\cos\theta)$

$\sin^2\theta + \sin\theta\cos\theta + \sin\theta\cos\theta + \cos^2\theta$

$\sin^2\theta + 2\sin\theta\cos\theta + \cos^2\theta$

$1 + 2\sin\theta\cos\theta$

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

$1 + 2\sin\theta\cos\theta$

$\sin^2\theta + \sin\theta\cos\theta + \sin\theta\cos\theta + \cos^2\theta$

$1 + 2\sin\theta\cos\theta$

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

$\dfrac{\cos^2\theta}{\sin^2\theta\cos^2\theta} + \dfrac{\sin^2\theta}{\sin^2\theta\cos^2\theta}$

$\dfrac{\cos^2\theta+\sin^2\theta}{\sin^2\theta\cos^2\theta}$

$\dfrac{1}{\sin^2\theta\cos^2\theta}$

$$\frac{1}{\sec^2\theta\cot\theta} = \frac{\sin\theta - \sin^3\theta}{\cos\theta}$$

$\left(\frac{1}{\sec^2\theta}\right)\left(\frac{1}{\cot\theta}\right)$

$\cos^2\theta\tan\theta$

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

$\frac{\sin\theta}{\cos\theta}\cdot(1-\sin^2\theta)$

$\tan\theta\cdot\cos^2\theta$

$\cos^2\theta\tan\theta$

Homework