Assignment 1 ICSE 10 2017

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9.c Prove

$$\frac{\sin\theta - 2\sin^3\theta}{2\cos^3\theta - \cos\theta} = \tan\theta$$

Solution:

Consider L.H.S side of given equation

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

But

$$\cos 2\theta = 2\cos^2\theta - 1 \tag{2}$$

$$\cos 2\theta = 1 - 2\sin^2\theta \tag{3}$$

implies

$$= \frac{\sin\theta\cos 2\theta}{\cos\theta\cos 2\theta} \tag{4}$$

$$= \tan\theta \tag{5}$$

L.H.S=R.H.S
Hence Proved