

6.1 In-class Practice

1. Show that the equation is NOT an identity.

a) $\sqrt{\sin^2 t} = \sin t$

b) $(\sin \theta + \cos \theta)^2 = \sin^2 \theta + \cos^2 \theta$

2. Verify the identity.

a) $\sin x + \cos x \cot x = \csc x$

b) $\frac{\csc^2 \theta}{1 + \tan^2 \theta} = \cot^2 \theta$

c) $\frac{\cot y - \tan y}{\sin y \cos y} = \csc^2 y - \sec^2 y$

d) $\frac{\tan^2 x}{\sec x + 1} = \frac{1 - \cos x}{\cos x}$

e) $\frac{\csc(-t) - \sin(-t)}{\sin(-t)} = \cot^2 t$

f) $\frac{\tan \alpha}{1 + \sec \alpha} + \frac{1 + \sec \alpha}{\tan \alpha} = 2 \csc \alpha$

g) $\sin^4 \theta + 2 \sin^2 \theta \cos^2 \theta + \cos^4 \theta = 1$

h) $\ln|\sec \theta + \tan \theta| = -\ln|\sec \theta - \tan \theta|$