Name: _____ Date: _____ IB Math A&A SL

Lesson 6.4 – Proving Trigonometric Identities

I. Warm-Up

1. Show that $3^{x-2} = \frac{1}{9}(3^x)$

II. Proving Trigonometric Identities: Show that the two trigonometric identities are equivalent.

2. Show that
$\csc^2\theta + \sec^2\theta - \tan^2\theta - \cot\theta = 2$

3. Show that
$\tan\theta + \cot\theta = \sec\theta\csc\theta$

4. Show that $\frac{\cot^2\theta}{1+\csc\theta} = \frac{1-\sin\theta}{\sin\theta}$

5. Show that $\frac{1}{1-\sin\theta} + \frac{1}{1+\sin\theta} = 2\sec^2\theta$

III. Practice: Show that the two trigonometric identities are equivalent.

6. $\sec x - \cos x = \sin x \tan x$

7. $\frac{\sin\theta}{1+\cos\theta} + \frac{\cos\theta}{\sin\theta} = \csc\theta$

8. $\frac{1}{\tan\beta} + \tan\beta = \frac{\sec^2\beta}{\tan\beta}$

9. $\sec^2 x + \csc^2 x = (\sec^2 x)(\csc^2 x)$

10. $\cos^2\theta - \sin^2\theta = 2\cos^2\theta - 1$

11. $\frac{\sec x - 1}{1-\cos x} = \sec x$