

Math 1613 - Trigonometry

Discussion Board Week 5 - Due 2016.07.10

Verify the given identities.

1. $\frac{1 - \cos^2(t)}{\sin^3(t)} = \csc(t)$
2. $\frac{(\cos(\alpha) - 1)^2}{\sin^2(\alpha)} = \frac{1 - \cos(\alpha)}{1 + \cos(\alpha)}$
3. $\frac{1 - \tan^2(x)}{1 - \tan^4(x)} = \cos^2(x)$
4. $\cot^2(z) \cos^2(z) = \cot^2(z) - \cos^2(z)$
5. $\frac{\sin(2y)}{\cot(y)} = 1 - \cos(2y)$
6. $\frac{\cot(w/2)}{1 + \cos(w)} = \csc(w)$
7. $\csc(2x) = \frac{\tan(x) + \cot(x)}{2}$
8. $\frac{\sin(x - y)}{\sin(x + y)} = \frac{\tan(x) - \tan(y)}{\tan(x) + \tan(y)}$
9. $\frac{2 - \sec^2(u)}{\sec^3(u)} = \cos(2u)$
10. $\frac{\sin(t) + \sin(5t)}{\cos(t) + \cos(5t)} = \tan(3t)$
11. $\frac{\sin(x) + \sin(y)}{\cos(x) - \cos(y)} = -\cot\left(\frac{x - y}{2}\right)$
12. $\frac{\cot(z)}{\csc(z) + 1} = \frac{\csc(z) - 1}{\cot(z)}$
13. $\frac{2 \tan^2(a) - 1}{\tan^3(a) - 3 \tan(a)} = \cot(3a)$
14. $\frac{\sin(2t) + \sin(4t)}{\cos(2t) - \cos(4t)} = \cot(t)$
15. $\cos(x) - \cos(y) = -2 \sin\left(\frac{x + y}{2}\right) \sin\left(\frac{x - y}{2}\right)$