Power-Reducing/Half Angle Formulas

Example #8   **Use the half-angle formulas to find the exact values of sine, cosine, and tangent of $\dfrac{7\pi}{12}$.**

Example #9   **Find $\sin\left(\dfrac{u}{2}\right)$, $\cos\left(\dfrac{u}{2}\right)$, and $\tan\left(\dfrac{u}{2}\right)$, given that $\csc u = -\dfrac{5}{3}$ and $\pi < u < \dfrac{3\pi}{2}$**

Example #10   **Verify: $\tan\dfrac{x}{2} = \csc x - \cot x$**

Example #11   **Use the half-angle formulas to simplify the expression:**
$$\sqrt{\frac{1+\cos 4x}{2}}$$

Example #12   **Use the half-angle formulas to find the exact values of sine, cosine, and tangent of 112.5°.**

Example #13   **Verify:** $\sin^2 \dfrac{x}{2} = \dfrac{\sec x - 1}{2\sec x}$