2.8 1
2

n=1 $\quad \cos\alpha \cdot \cos\frac{\alpha}{2} \cdot \sin\frac{\alpha}{2} = 2^{-2} \sin 2\alpha$

$$\cos\alpha \, \frac{1}{2} \sin\alpha = \frac{1}{4} \cdot 2 \sin\alpha \cos\alpha \ \checkmark$$

n=k+1

$$\cos\alpha \cdot \cos\frac{\alpha}{2} \cdots \cos\frac{\alpha}{2^{n}} \cdot \cos\frac{\alpha}{2^{n+1}} \cdot \sin\frac{\alpha}{2^{n+1}} \overset{?}{=} 2^{-(n+1)-1} \sin(2\alpha)$$

$$\frac{2^{-n-1} \cdot \sin(2\alpha)}{\sin\left(\frac{\alpha}{2^n}\right)} \cdot \cos\frac{\alpha}{2^{n+1}} \cdot \sin\frac{\alpha}{2^{n+1}} \overset{?}{=} \text{"}$$

$$\Downarrow$$

$$\frac{2^{-n-1} \sin(2\alpha) \cdot \frac{1}{2} \cancel{\sin\frac{\alpha}{2^{n}}}}{\cancel{\sin\left(\frac{\alpha}{2^n}\right)}} = 2^{-n-2} \cdot \sin(2\alpha)$$