

2.54
5 p 1

$$n=1 \quad \sin x = \frac{\sin^2 x}{\sin x} \quad \checkmark$$

$$n=k+1 \quad \underbrace{\sin x + \dots + \sin(2k+1)x}_{?} + \sin(2k+1)x \stackrel{?}{=} \frac{\sin^2(k+1)x}{\sin x}$$

$$\frac{\sin^2 kx}{\sin x} + \sin(2k+1)x \stackrel{?}{=}$$

$$\frac{\sin^2 kx + \sin x \sin(2k+1)x}{\sin x} \stackrel{?}{=}$$

$$\frac{\sin^2 kx + 0.5[\cos 2kx - \cos(2k+2)x]}{\sin x}$$

$$\frac{\sin^2 kx + 0.5 \frac{\sin x}{\sin x} [1 - 2\sin^2(kx) - 1 + 2\sin^2(k+1)x]}{\sin x} = \frac{\sin^2(k+1)x}{\sin x}$$