

2.83
k4

$$\begin{aligned}2\sin x &= 2\cos x \\ \sin x &= \cos x \\ x &= \frac{\pi}{4}\end{aligned}$$



$$S_1 = \int_0^{\pi/4} (2\cos x - 2\sin x) dx = 2\sin x + 2\cos x \Big|_0^{\pi/4} = 2\frac{\sqrt{2}}{2} + 2\frac{\sqrt{2}}{2} - 0 - 2 = 2\sqrt{2} - 2$$

$$S_2 = \int_{\pi/4}^{\pi/2} (2\sin x - 2\cos x) dx = -2\cos x - 2\sin x \Big|_{\pi/4}^{\pi/2} = (-0 - 2) - (-2\frac{\sqrt{2}}{2} - 2\frac{\sqrt{2}}{2}) = 2\sqrt{2} - 2$$

$$S_1 + S_2 = 4\sqrt{2} - 4 = 4(\sqrt{2} - 1)$$