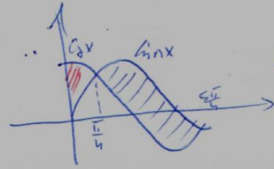


4.11
PT



$$S_1 = \int_{\frac{\pi}{4}}^{\frac{\pi}{2}} (\sin x - \cos x) dx = -\cos x - \sin x \Big|_{\frac{\pi}{4}}^{\frac{\pi}{2}} =$$

$$\left(\frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2}\right) - \left(-\frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{2}\right) = 4 \frac{\sqrt{2}}{2} = 2\sqrt{2}$$

$$S_2 = \int_0^{\frac{\pi}{4}} (\cos x - \sin x) dx = \sin x + \cos x \Big|_0^{\frac{\pi}{4}} = \left(\frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2}\right) - (0+1) = \sqrt{2} - 1$$

$$S_1 + S_2 = 3\sqrt{2} - 1$$