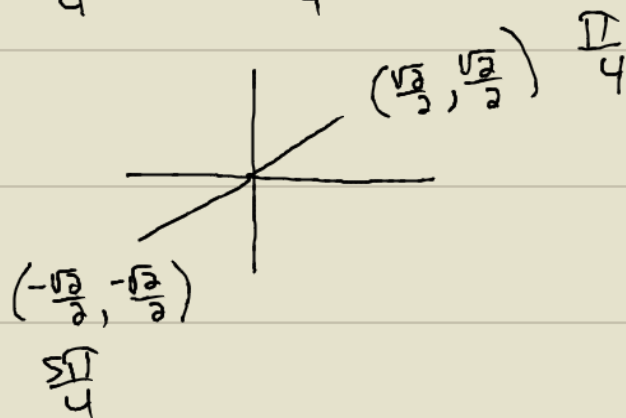


$$11. f(x) = \cot x \quad g(x) = 1 \quad \frac{\pi}{4} \leq x \leq \frac{3\pi}{4}$$

$$\cot x = 1$$

$$x = \frac{\pi}{4} \quad x = \frac{5\pi}{4}$$



$$\int_{\frac{\pi}{4}}^{\frac{3\pi}{4}} \text{ABOVE} \quad \text{BELOW}$$

$$\int_{\frac{\pi}{4}}^{\frac{3\pi}{4}} (1) - (\cot x) dx$$

$$\int_{\frac{\pi}{4}}^{\frac{3\pi}{4}} \left(1 - \frac{\cos x}{\sin x}\right) dx$$

$$u = \sin x$$

$$du = \cos x dx$$

$$\int_{\frac{\pi}{4}}^{\frac{3\pi}{4}} 1 dx - \int_{x=\frac{\pi}{4}}^{x=\frac{3\pi}{4}} \frac{1}{u} du$$

$$\left[x \right]_{\frac{\pi}{4}}^{\frac{3\pi}{4}} - \left[\ln |u| \right]_{x=\frac{\pi}{4}}^{x=\frac{3\pi}{4}}$$

$$\left[\frac{3\pi}{4} - \frac{\pi}{4} \right] - \left[\ln |\sin x| \right]_{\frac{\pi}{4}}^{\frac{3\pi}{4}}$$

$$\frac{2\pi}{4} - \left[\ln \left| \sin \frac{3\pi}{4} \right| - \ln \left| \sin \frac{\pi}{4} \right| \right]$$

$$\frac{\pi}{2} - \left[\ln \left| \frac{\sqrt{2}}{2} \right| - \ln \left| \frac{\sqrt{2}}{2} \right| \right]$$

$$\left(\frac{\pi}{2} \right)$$

