$$S_{xx} = \frac{1}{2} D_{xx} = 2\int_0^\infty R_{xx}\cos(2\pi f\tau)\,d\tau = 2\int_0^b (b-\tau)\cos(2\pi f\tau)\,d\tau$$

$$= \frac{b\sin(2\pi f b)}{\pi f} - 2\int_0^b \tau\cos(2\pi f\tau)\,d\tau$$

$u = \tau \quad du = d\tau$

$dv = \cos(2\pi f\tau)\,d\tau$

integration by parts

$v = \frac{\sin(2\pi f\tau)}{2\pi f}$

$$-2\int_0^b \tau\cos(2\pi f\tau)\,d\tau = -\frac{b\sin(2\pi f b)}{\pi f} + 2\int_0^b \frac{\sin(2\pi f\tau)}{2\pi f}\,d\tau$$

$$= -\frac{b\sin(2\pi f b)}{\pi f} - \frac{\cos(2\pi f b)}{2\pi^2 f^2} + \frac{1}{2\pi^2 f^2}$$

$$\boxed{S_{xx} = \frac{1}{2\pi^2 f^2} - \frac{\cos(2\pi f b)}{2\pi^2 f^2}}$$