$t \geq -\frac{1}{2}$ $\quad \frac{1}{2} - t \geq 0$, $\frac{1}{2} \geq t$

$$rect\left(t, \frac{1}{2}\right) = 1\left[u\left(t+\frac{1}{2}\right) + u\left(t-\frac{1}{2}\right)\right]$$

$$rect\left(t-\tau\right) = u\left(t-\tau+\frac{1}{2}\right) - u\left(t-\tau-\frac{1}{2}\right)$$

$t - \tau + \frac{1}{2} \geq 0 \qquad \tau \geq t - \frac{1}{2}$

$t + \frac{1}{2} \geq \tau$

$$\int_{-\infty}^{\infty} rect(\tau)\, rect\left(t-\tau\right) d\tau$$

$t+1/2$

$$\int u\left(\tau+\frac{1}{2}\right) u\left(t-\tau+\frac{1}{2}\right) d\tau = \int_{-\frac{1}{2}} d\tau = t+1$$

$t+\frac{1}{2} \geq \tau \geq -\frac{1}{2}$

$$-\int u\left(\tau-\frac{1}{2}\right) u\left(t-\tau+\frac{1}{2}\right) d\tau = \int_{1/2}^{t+1/2} d\tau = -t$$

$t+\frac{1}{2} \geq \tau \geq \frac{1}{2}$

$$-\int u\left(\tau+\frac{1}{2}\right) u\left(t-\tau-\frac{1}{2}\right) d\tau \qquad \int d\tau = -t$$

$t-\frac{1}{2} \geq \tau \geq -\frac{1}{2}$

$$\int u\left(\tau-\tfrac{1}{2}\right)u\left(t-\tau-\tfrac{1}{2}\right)d\tau \qquad \int d\tau = t+1$$

$$t-\tfrac{1}{2} \geq \tau \geq \tfrac{1}{2}$$

$$\frac{t\sin^2 t}{\pi^2 t^2} = \frac{1}{2\pi^2}\left(\frac{1}{t} + \frac{\cos 2t}{t}\right)$$