s. 728 $\boxed{\text{opg 1}}$

Half-range sine series:

$$f(t) = t\sin t \qquad 0 \le t \le \pi \qquad T = 2\pi \qquad \omega = 1$$

$a_0 = 0$, $a_n = 0$ for n positive hele tal

$$b_n = \frac{4}{2\pi}\int_0^{\pi} t\sin t \sin nt\, dt \overset{\text{TI-89}}{=} \left(\frac{1}{(n+1)^2\pi} - \frac{1}{(n-1)^2\pi}\right)\cos(n\pi)$$

$$+ \left(\frac{1}{n+1} - \frac{1}{n-1}\right)\sin(n\pi) + \frac{1}{(n+1)^2\pi} - \frac{1}{(n-1)^2\pi}$$

$\underline{\underline{n \neq 1}}$

$$= \left(\frac{1}{(n+1)^2\pi} - \frac{1}{(n-1)^2\pi}\right)\left((-1)^n + 1\right) = \frac{(n-1)^2 - (n+1)^2}{(n-1)^2(n+1)^2\pi}\left((-1)^n + 1\right)$$

$$b_n = \frac{-4n\cdot\left((-1)^n + 1\right)}{(n-1)^2(n+1)^2\pi}$$

$$b_1 = \frac{4}{2\pi}\int_0^{\pi} t\sin t \cdot \sin t\, dt \overset{\text{TI-89}}{=} \frac{\pi}{2}$$

$$f(t) = \frac{\pi}{2}\sin t + \sum_{n=2}^{\infty} \frac{-4n\left((-1)^n + 1\right)}{(n-1)^2(n+1)^2\pi}\sin(nt)$$

$$f(t) := \frac{\pi}{2}\cdot\sin(t) + \sum_{n=2}^{10} -4\cdot n\cdot\frac{(-1)^n + 1}{(n-1)^2\cdot(n+1)^2\cdot\pi}\cdot\sin(n\cdot t)$$