S.T.F.

$$x(t) = a_0 + \sum_{n=1}^{\infty}\left[a_n \cos\frac{n\pi t}{2} + b_n \,\text{sen}\,\frac{n\pi t}{2}\right]$$

$$a_0 = \frac{1}{T}\int_{t_0}^{t_0+T} f(t)\,dt$$

$$= \frac{1}{4}\int_{-2}^{2} f(t)\,dt$$

$$= \frac{1}{4}\int_{-1}^{0} A(t+1)\,dt - \frac{1}{4}\int_{0}^{1} A(t-1)\,dt$$

$$= \frac{A}{4}\left\{\frac{t^2}{2}+t\,\Big|_{-1}^{0}\right\} - \frac{A}{4}\left\{\frac{t^2}{2}-t\,\Big|_{0}^{1}\right\}$$

$$= \frac{A}{4}\left\{\frac{1}{2}\right\} - \frac{A}{4}\left\{-\frac{1}{2}\right\}$$

$$a_0 = \frac{A}{8} + \frac{A}{8} = \frac{A}{4}$$

$$b_n = \frac{1}{2}\int_{-2}^{2} f(t)\,dt = \frac{1}{2}\int_{-1}^{0} A(t+1)\,\text{sen}\,\frac{n\pi}{2}t\,dt \ldots$$

$$\ldots - \frac{1}{2}\int_{0}^{1} A(t-1)\,\text{sen}\,\frac{n\pi}{2}t\,dt = \frac{A}{2}\left[\int_{-1}^{0}(t+1)\,\text{sen}\,\frac{n\pi}{2}t\,dt - \int_{0}^{1}(t-1)\,\text{sen}\,\frac{n\pi t}{2}\,dt\right]$$

$u = t+1;\ t-1$ $\quad dv = \text{sen}\,\frac{n\pi}{2}t\,dt$

$du = dt$ // $\quad v = -\frac{2}{\pi n}\cos\frac{n\pi}{2}t$

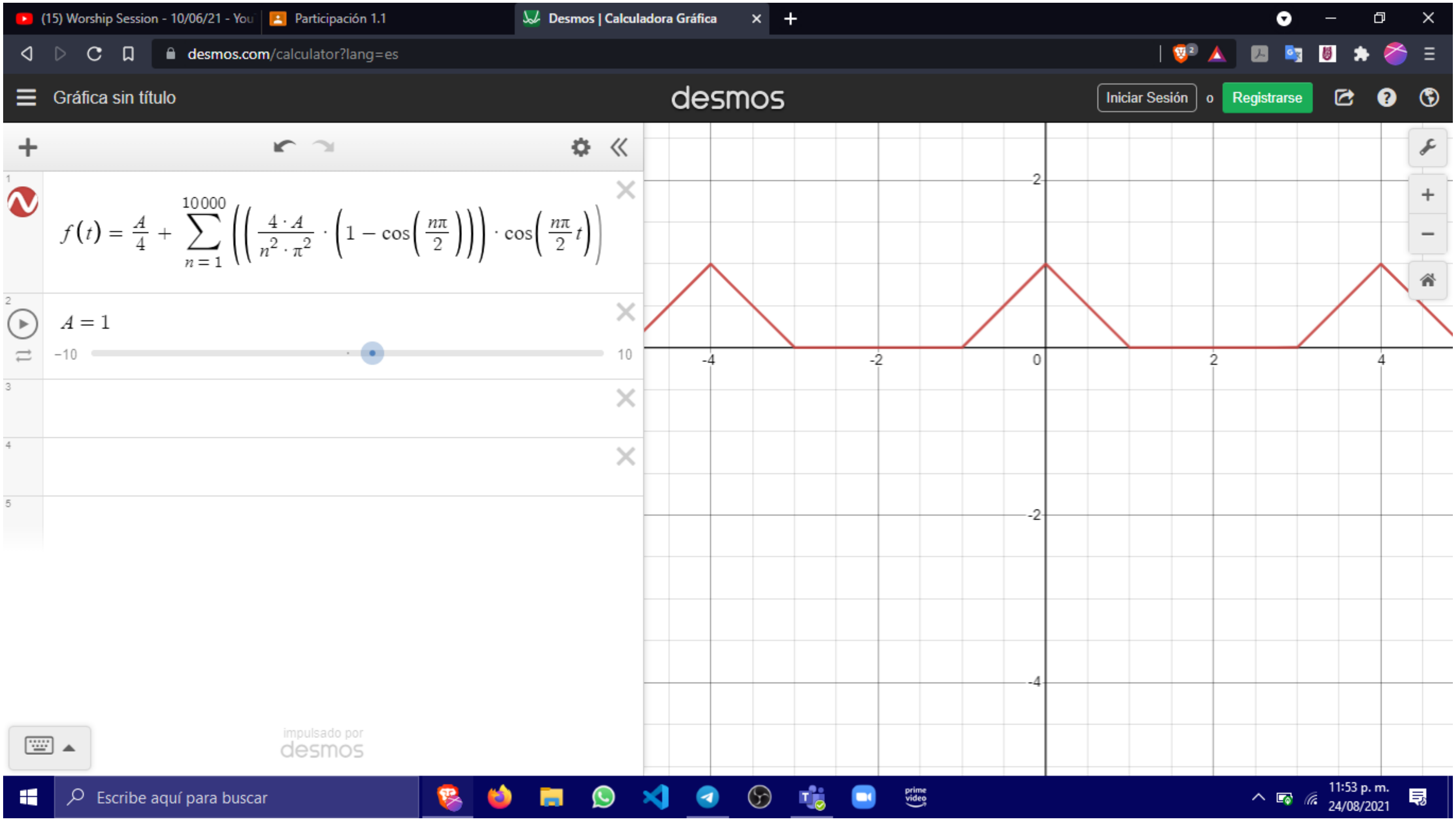
$$= \frac{A}{2}\left[-\frac{2(t+1)}{\pi n}\cos\frac{n\pi}{2}t\,\Big|_{-1}^{0} + \frac{2}{\pi n}\int_{-1}^{0}\cos\frac{n\pi}{2}t\,dt\right]$$

$$-\frac{A}{2}\left[-\frac{2(t-1)}{\pi n}\cos\frac{n\pi}{2}t\,\Big|_{0}^{1} + \frac{2}{\pi n}\int_{0}^{1}\cos\frac{n\pi t}{2}\,dt\right]$$

$$= \frac{A}{2}\left[\frac{4}{\pi^2 n^2}\,\text{sen}\,\frac{n\pi t}{2}\,\Big|_{-1}^{0}\right] - \frac{A}{2}\left[\frac{4}{\pi^2 n^2}\,\text{sen}\,\frac{n\pi t}{2}\,\Big|_{0}^{1}\right]$$

$$= +\frac{A}{2\pi^2 n^2}\,\text{sen}\,\frac{n\pi}{2} - \frac{A}{2\pi^2 n^2}\,\text{sen}\,\frac{n\pi}{2} = \emptyset$$

$$x(t) = \frac{A}{4} + \sum_{n=1}^{\infty}\left[\left(\frac{4A}{n^2\pi^2}\left(1-\cos\frac{n\pi}{2}\right)\right)\cdot\cos\frac{n\pi t}{2}\right]$$



(15) Worship Session - 10/06/21 - You
Participación 1.1
Desmos | Calculadora Gráfica
desmos.com/calculator?lang=es
Gráfica sin título
desmos
Iniciar Sesión
o
Registrarse
$f(t) = \frac{A}{4} + \sum_{n=1}^{10000} \left(\left(\frac{4 \cdot A}{n^2 \cdot \pi^2} \cdot \left(1 - \cos\left(\frac{n\pi}{2} \right) \right) \right) \cdot \cos\left(\frac{n\pi}{2} t \right) \right)$
$A = 1$
−10
10
impulsado por
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