1. Construct successive Fourier polynomials up to degree 7 for the square wave function f, with period  $2\pi$ , given by

$$f(x) = \begin{cases} 1 & -\boldsymbol{p} \le x \le 0 \\ 0 & 0 \le x \le \boldsymbol{p}. \end{cases}$$

$$f(x) = \begin{cases} 0 & -\mathbf{p} \le x \le 0 \\ 1 & 0 \le x \le \frac{p}{2} \\ 0 & \frac{p}{2} \le x \le \mathbf{p}. \end{cases}$$

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