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In[ ]:= n = 8;
f[t_] := Sin[t] / (1 + Cos[t]^2);
Do[x[k] = 2 k * Pi / (2 n + 1), {k, 0, 2 n}];
Do[l[k_, t_] :=
  (s = 1; Do[If[j ≠ k, s *= Sin[(t - x[j]) / 2] / Sin[(x[k] - x[j]) / 2]], {j, 0, 2 n}];
  s), {k, 0, 2 n}];
T[t_] := Sum[l[k, t] * f[x[k]], {k, 0, 2 n}];
Expand[T[t]]
Plot[f[t] - T[t], {t, 0, 2 Pi}]
Plot[T[t], {t, -4 Pi, 4 Pi}]

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$$\begin{aligned}
\text{Out[]} = & -\frac{1}{1 + \cos\left[\frac{2\pi}{17}\right]^2} \csc\left[\frac{\pi}{17}\right]^2 \csc\left[\frac{2\pi}{17}\right] \csc\left[\frac{3\pi}{17}\right]^2 \csc\left[\frac{4\pi}{17}\right]^2 \sec\left[\frac{\pi}{34}\right]^2 \sec\left[\frac{3\pi}{34}\right]^2 \sec\left[\frac{5\pi}{34}\right]^2 \\
& \sec\left[\frac{7\pi}{34}\right]^2 \sin\left[\frac{t}{2}\right] \sin\left[\frac{1}{2}\left(-\frac{32\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{30\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{28\pi}{17} + t\right)\right] \\
& \sin\left[\frac{1}{2}\left(-\frac{26\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{24\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{22\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{20\pi}{17} + t\right)\right] \\
& \sin\left[\frac{1}{2}\left(-\frac{18\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{16\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{14\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{12\pi}{17} + t\right)\right] \\
& \sin\left[\frac{1}{2}\left(-\frac{10\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{8\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{6\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{4\pi}{17} + t\right)\right] + \\
& \frac{1}{1 + \cos\left[\frac{4\pi}{17}\right]^2} \csc\left[\frac{\pi}{17}\right]^2 \csc\left[\frac{2\pi}{17}\right]^2 \csc\left[\frac{3\pi}{17}\right]^2 \csc\left[\frac{4\pi}{17}\right] \sec\left[\frac{\pi}{34}\right]^2 \sec\left[\frac{3\pi}{34}\right]^2 \sec\left[\frac{5\pi}{34}\right]^2 \\
& \sec\left[\frac{7\pi}{34}\right]^2 \sin\left[\frac{t}{2}\right] \sin\left[\frac{1}{2}\left(-\frac{32\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{30\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{28\pi}{17} + t\right)\right] \\
& \sin\left[\frac{1}{2}\left(-\frac{26\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{24\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{22\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{20\pi}{17} + t\right)\right] \\
& \sin\left[\frac{1}{2}\left(-\frac{18\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{16\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{14\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{12\pi}{17} + t\right)\right] \\
& \sin\left[\frac{1}{2}\left(-\frac{10\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{8\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{6\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{2\pi}{17} + t\right)\right] - \\
& \frac{1}{1 + \sin\left[\frac{5\pi}{34}\right]^2} \csc\left[\frac{\pi}{17}\right]^2 \csc\left[\frac{2\pi}{17}\right]^2 \csc\left[\frac{3\pi}{17}\right]^2 \csc\left[\frac{4\pi}{17}\right]^2 \sec\left[\frac{\pi}{34}\right]^2 \sec\left[\frac{3\pi}{34}\right]^2 \sec\left[\frac{5\pi}{34}\right] \\
& \sec\left[\frac{7\pi}{34}\right]^2 \sin\left[\frac{t}{2}\right] \sin\left[\frac{1}{2}\left(-\frac{32\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{30\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{28\pi}{17} + t\right)\right] \\
& \sin\left[\frac{1}{2}\left(-\frac{26\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{24\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{22\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{20\pi}{17} + t\right)\right] \\
& \sin\left[\frac{1}{2}\left(-\frac{18\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{16\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{14\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{12\pi}{17} + t\right)\right] \\
& \sin\left[\frac{1}{2}\left(-\frac{10\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{8\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{4\pi}{17} + t\right)\right] \sin\left[\frac{1}{2}\left(-\frac{2\pi}{17} + t\right)\right] + \\
& \frac{1}{1 + \sin\left[\frac{\pi}{34}\right]^2} \csc\left[\frac{\pi}{17}\right]^2 \csc\left[\frac{2\pi}{17}\right]^2 \csc\left[\frac{3\pi}{17}\right]^2 \csc\left[\frac{4\pi}{17}\right]^2 \sec\left[\frac{\pi}{34}\right] \sec\left[\frac{3\pi}{34}\right]^2 \sec\left[\frac{5\pi}{34}\right]^2
\end{aligned}$$

[illegible]

$$\begin{aligned}
& \text{Sec}\left[\frac{7\pi}{34}\right]^2 \text{Sin}\left[\frac{t}{2}\right] \text{Sin}\left[\frac{1}{2}\left(-\frac{30\pi}{17} + t\right)\right] \text{Sin}\left[\frac{1}{2}\left(-\frac{28\pi}{17} + t\right)\right] \text{Sin}\left[\frac{1}{2}\left(-\frac{26\pi}{17} + t\right)\right] \\
& \text{Sin}\left[\frac{1}{2}\left(-\frac{24\pi}{17} + t\right)\right] \text{Sin}\left[\frac{1}{2}\left(-\frac{22\pi}{17} + t\right)\right] \text{Sin}\left[\frac{1}{2}\left(-\frac{20\pi}{17} + t\right)\right] \text{Sin}\left[\frac{1}{2}\left(-\frac{18\pi}{17} + t\right)\right] \\
& \text{Sin}\left[\frac{1}{2}\left(-\frac{16\pi}{17} + t\right)\right] \text{Sin}\left[\frac{1}{2}\left(-\frac{14\pi}{17} + t\right)\right] \text{Sin}\left[\frac{1}{2}\left(-\frac{12\pi}{17} + t\right)\right] \text{Sin}\left[\frac{1}{2}\left(-\frac{10\pi}{17} + t\right)\right] \\
& \text{Sin}\left[\frac{1}{2}\left(-\frac{8\pi}{17} + t\right)\right] \text{Sin}\left[\frac{1}{2}\left(-\frac{6\pi}{17} + t\right)\right] \text{Sin}\left[\frac{1}{2}\left(-\frac{4\pi}{17} + t\right)\right] \text{Sin}\left[\frac{1}{2}\left(-\frac{2\pi}{17} + t\right)\right]
\end{aligned}$$

