

$$\begin{aligned}
& \frac{1}{x \sin\left(\frac{x}{2}\right)} \left( \cos(x) + \frac{1}{900} x \sin\left(\frac{x}{2}\right) \right. \\
& \quad \left. \left( (322 + 13 \sqrt{70}) \cos\left(\frac{1}{42} \sqrt{245 - 14 \sqrt{70}} x\right) + (322 - 13 \sqrt{70}) \cos\left(\frac{1}{42} \sqrt{245 + 14 \sqrt{70}} x\right) + 256 \right) - 1 \right) \\
& = \frac{\cos(x) - 1}{x \sin\left(\frac{x}{2}\right)} + \frac{\left( (322 + 13 \sqrt{70}) \cos\left(\frac{1}{42} \sqrt{245 - 14 \sqrt{70}} x\right) + (322 - 13 \sqrt{70}) \cos\left(\frac{1}{42} \sqrt{245 + 14 \sqrt{70}} x\right) + 256 \right)}{900} \\
& = -\frac{2 \sin\left(\frac{x}{2}\right)}{x} + \frac{\left( (322 + 13 \sqrt{70}) \cos\left(\frac{1}{42} \sqrt{245 - 14 \sqrt{70}} x\right) + (322 - 13 \sqrt{70}) \cos\left(\frac{1}{42} \sqrt{245 + 14 \sqrt{70}} x\right) + 256 \right)}{900} \\
& \geq -\frac{\frac{x}{2} - \frac{53272705x^3}{2886957408} + \frac{38518909x^5}{230956592640} - \frac{269197963x^7}{504409198325760} + \frac{4585922449x^9}{7989841701480038400}}{x} + \\
& \quad 2 \frac{\frac{2290747x^2}{481159568} + \frac{1281433x^4}{115478296320} + \frac{560401x^6}{36029228451840} + \frac{1029037x^8}{88776018905333760}}{1 + \frac{229(245-14\sqrt{70})x^2}{13738032} + \frac{(245-14\sqrt{70})^2x^4}{7343602560} + \frac{127(245-14\sqrt{70})^3x^6}{215452839280250880}} + \\
& \quad \frac{1}{900} \left( (322 + 13 \sqrt{70}) \frac{1 - \frac{3665(245-14\sqrt{70})x^2}{13738032} + \frac{79(245-14\sqrt{70})^2x^4}{8975514240} - \frac{2923(245-14\sqrt{70})^3x^6}{43090567856050176}}{1 + \frac{229(245-14\sqrt{70})x^2}{13738032} + \frac{(245-14\sqrt{70})^2x^4}{7343602560} + \frac{127(245-14\sqrt{70})^3x^6}{215452839280250880}} + \right. \\
& \quad \left. (322 - 13 \sqrt{70}) \frac{1 - \frac{3665(245+14\sqrt{70})x^2}{13738032} + \frac{79(245+14\sqrt{70})^2x^4}{8975514240} - \frac{2923(245+14\sqrt{70})^3x^6}{43090567856050176}}{1 + \frac{229(245+14\sqrt{70})x^2}{13738032} + \frac{(245+14\sqrt{70})^2x^4}{7343602560} + \frac{127(245+14\sqrt{70})^3x^6}{215452839280250880}} + 256 \right) \\
& = (30618x^{10}(-1842095603832082682062307328 - \\
& \quad 14303701567804698179665920x^2 + 175565078758068205244416x^4 + \\
& \quad 433430062270086495488x^6 + 519394426693531488x^8 + 338139801172309x^{10})) / \\
& (5(-322092130874398727970226176 - 2630795881492799060705280x^2 - \\
& \quad 10613043075156089831424x^4 - 26001794477727129600x^6 - \\
& \quad 34420014834476544x^8 - 27162785643840x^{10} - 11111348745x^{12}) \\
& \quad (88776018905333760 + 422652717527040x^2 + 985124684544x^4 + 1380828064x^6 + 1029037x^8)) \\
& \geq 0 \\
& \iff -1842095603832082682062307328 - 14303701567804698179665920x^2 + \\
& \quad 175565078758068205244416x^4 + 433430062270086495488x^6 + \\
& \quad 519394426693531488x^8 + 338139801172309x^{10} \leq 0, (0 \leq x \leq 2\pi)
\end{aligned}$$