$$\mathrm{Cotg}(h)\Big|_{n=3} = \frac{1}{s} + \cfrac{1}{\cfrac{3}{s} + \cfrac{1}{\cfrac{5}{s}}} = \frac{1}{s} + \frac{5s}{15+s^2} = \frac{15+s^2+5s^2}{15s+s^3} = \frac{6s^2+15}{s^3+15s}$$

$$H(s) = \frac{B_{n,0}}{B_n(s)} = \frac{15}{s^3+6s^2+15s+15}$$ ← Transf Bessel $n=3$

$$|S_{21}|^2 = T(s)\,T(-s) = \frac{15}{s^3+6s^2+15s+15}\cdot\frac{15}{-s^3+6s^2-15s+15} = \frac{15^2}{-s^6+s^4(36-30)+s^2(6\cdot15+6\cdot15-15^2)+15^2}$$

$$= \frac{225}{-s^6+6s^4-45s^2+225}$$

$$|S_{11}|^2 = 1-|S_{21}|^2 = \frac{-s^6+6s^4-45s^2+225-225}{-s^6+6s^4-45s^2+225} = \frac{-s^6+6s^4-45s^2}{-s^6+6s^4-45s^2+225}$$

$$\to (as^3+bs^2+cs)(-as^3+bs^2-cs)$$

$$-a^2s^6+s^4(b^2-2ac)+s^2(-c^2)$$

$$\hookrightarrow a=1,\ c=\sqrt{45},\ b=\sqrt{6+2\sqrt{45}}$$

$$\hookrightarrow S_{11} = \frac{s^3+4{,}407s^2+6{,}708s}{s^3+6s^2+15s+15}$$

$$Z_1 = \frac{1+S_{11}}{1-S_{11}} = \frac{s^3+6s^2+15s+15+s^3+4{,}407s^2+6{,}708s}{s^3+6s^2+15s+15-s^3-4{,}407s^2-6{,}708s} = \frac{2s^3+10{,}407s^2+21{,}708s+15}{1{,}593s^2+8{,}292s+15}$$

$$\begin{array}{l|l}
2s^3+10{,}407s^2+21{,}708s+15 & 1{,}593s^2+8{,}292s+15 \\
-\,2s^3+10{,}407s^2+18{,}83s & 1{,}255s \text{ (L)} \\
\hline
\end{array}$$

$$\begin{array}{l|l}
1{,}593s^2+8{,}292s+15 & 2{,}878s+15 \\
-\,1{,}593s^2+8{,}292s & 0{,}553s \text{ (C)} \\
\hline
\end{array}$$

$$\begin{array}{l|l}
2{,}878s+15 & 15 \\
-\,2{,}878s & 0{,}192s \text{ (L)} \\
\hline
\end{array}$$

$$\begin{array}{l|l}
15 & 15 \\
15 & 1 \text{ (R)} \\
\hline
0 &
\end{array}$$

⇒