

$$0.004519 z^9 + 0.007442 z^8 - 0.08589 z^7 + 0.1608 z^6 - 0.09249 z^5 - 0.03386 z^4 + 0.05398 z^3 \\ - 0.01336 z^2 - 0.001149 z + 5.389\text{e-}19$$

$$\begin{array}{r} \text{-----} \\ \text{-----} \\ \text{-----} \\ \text{-----} \end{array}$$

$$z^{10} - 7.546 z^9 + 25.84 z^8 - 52.96 z^7 + 72.12 z^6 - 68.24 z^5 + 45.46 z^4 - 21.06 z^3 + 6.492 z^2 \\ - 1.202 z + 0.1015$$

$$\left(0.004519 z^9 + 0.007442 z^8 - 0.08589 z^7 + 0.1608 z^6 - 0.09249 z^5 - 0.03386 z^4 + 0.05398 z^3 \right. \\ \left. - 0.01336 z^2 - 0.001149 z + 5.389\text{E-}19 \right) / \left(z^{10} - 7.546 z^9 + 25.84 z^8 - 52.96 z^7 + 72.12 z^6 \right. \\ \left. - 68.24 z^5 + 45.46 z^4 - 21.06 z^3 + 6.492 z^2 - 1.202 z + 0.1015 \right)$$

$$\cdot z^{-10}$$

$$\left(0.004519 \cdot z^{-1} + 0.007442 \cdot z^{-2} - 0.08589 \cdot z^{-3} + 0.1608 \cdot z^{-4} - 0.09249 \cdot z^{-5} - 0.03386 \cdot z^{-6} \right. \\ \left. + 0.05398 \cdot z^{-7} - 0.01336 \cdot z^{-8} - 0.001149 \cdot z^{-9} + (5.389\text{E-}19) \cdot z^{-10} \right) / \left(1 - 7.546 z^{-1} \right. \\ \left. + 25.84 z^{-2} - 52.96 z^{-3} + 72.12 z^{-4} - 68.24 z^{-5} + 45.46 z^{-6} - 21.06 z^{-7} + 6.492 z^{-8} \right. \\ \left. - 1.202 z^{-9} + 0.1015 \cdot z^{-10} \right)$$

$$\frac{Y(z)}{X(z)} = \left(0.004519 \cdot z^{-1} + 0.007442 \cdot z^{-2} - 0.08589 \cdot z^{-3} + 0.1608 \cdot z^{-4} - 0.09249 \cdot z^{-5} - 0.03386 \right. \\ \left. \cdot z^{-6} + 0.05398 \cdot z^{-7} - 0.01336 \cdot z^{-8} - 0.001149 \cdot z^{-9} + (5.389\text{E-}19) \cdot z^{-10} \right) / \left(1 - 7.546 z^{-1} \right. \\ \left. + 25.84 z^{-2} - 52.96 z^{-3} + 72.12 z^{-4} - 68.24 z^{-5} + 45.46 z^{-6} - 21.06 z^{-7} + 6.492 z^{-8} \right. \\ \left. - 1.202 z^{-9} + 0.1015 \cdot z^{-10} \right)$$

$$Y(z) \cdot 1 - 7.546 z^{-1} \cdot Y(z) + 25.84 z^{-2} \cdot Y(z) - 52.96 z^{-3} \cdot Y(z) + 72.12 z^{-4} \cdot Y(z) - 68.24 z^{-5} \cdot Y(z) \\ + 45.46 z^{-6} \cdot Y(z) - 21.06 z^{-7} \cdot Y(z) + 6.492 z^{-8} \cdot Y(z) - 1.202 z^{-9} \cdot Y(z) + 0.1015 \cdot z^{-10} \cdot Y(z) \\ = 0.004519 \cdot z^{-1} \cdot X(z) + 0.007442 \cdot z^{-2} \cdot X(z) - 0.08589 \cdot z^{-3} \cdot X(z) + 0.1608 \cdot z^{-4} \cdot X(z) - 0.09249 \\ \cdot z^{-5} \cdot X(z) - 0.03386 \cdot z^{-6} \cdot X(z) + 0.05398 \cdot z^{-7} \cdot X(z) - 0.01336 \cdot z^{-8} \cdot X(z) - 0.001149 \cdot z^{-9} \cdot X(z) \\ + (5.389\text{E-}19) \cdot z^{-10} \cdot X(z)$$

Solve for Y(z)

$$Y(z) = 0.004519 \cdot z^{-1} \cdot X(z) + 0.007442 \cdot z^{-2} \cdot X(z) - 0.08589 \cdot z^{-3} \cdot X(z) + 0.1608 \cdot z^{-4} \cdot X(z) - 0.09249 \\ \cdot z^{-5} \cdot X(z) - 0.03386 \cdot z^{-6} \cdot X(z) + 0.05398 \cdot z^{-7} \cdot X(z) - 0.01336 \cdot z^{-8} \cdot X(z) - 0.001149 \cdot z^{-9} \cdot X(z) \\ + (5.389\text{E-}19) \cdot z^{-10} \cdot X(z) + 7.546 z^{-1} \cdot Y(z) - 25.84 z^{-2} \cdot Y(z) + 52.96 z^{-3} \cdot Y(z) - 72.12 z^{-4} \\ \cdot Y(z) + 68.24 z^{-5} \cdot Y(z) - 45.46 z^{-6} \cdot Y(z) + 21.06 z^{-7} \cdot Y(z) - 6.492 z^{-8} \cdot Y(z) + 1.202 z^{-9} \cdot Y(z) \\ - 0.1015 \cdot z^{-10} \cdot Y(z)$$

Invers Z

$$\begin{aligned} y[n] = & 0.004519 \cdot x[n-1] + 0.007442 \cdot x[n-2] - 0.08589 \cdot x[n-3] + 0.1608 \cdot x[n-4] - 0.09249 \\ & \cdot x[n-5] - 0.03386 \cdot x[n-6] + 0.05398 \cdot x[n-7] - 0.01336 \cdot x[n-8] - 0.001149 \cdot x[n-9] \\ & + (5.389\text{E}-19) \cdot x[n-10] + 7.546 y[n-1] - 25.84 y[n-2] + 52.96 y[n-3] - 72.12 y[n-4] \\ & + 68.24 y[n-5] - 45.46 y[n-6] + 21.06 y[n-7] - 6.492 y[n-8] + 1.202 y[n-9] \\ & - 0.1015 \cdot y[n-10] \end{aligned}$$