Solutions for z-Transform Tutorial

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6. (a) Starting with the system function

$$H(z) = \frac{Y(z)}{X(z)} = \frac{1 - z^{-2}}{1 - 1.131z^{-1} + 0.64z^{-2}}$$

Get

$$Y(z)\left(1 - 1.131z^{-1} + 0.64z^{-2}\right) = X(z)\left(1 - z^{-2}\right)$$

Takine inverse z-transform gives the Constant Coefficient Difference Equation:

$$y(n) = 1.131y(n-1) - 0.64y(n-2) + x(n) - x(n-2)$$

The filter coefficients are $a(1) = 1.131, a(2) = -0.64, b(0) = 1, b(1) = 0, b(2) = -1$.