Find inverse Z transform of the following functions by hand PFD

1. $X(z) = \frac{1}{(1+z^{-1})\left(1+\frac{1}{3}z^{-1}\right)}$, $|z| > 1$

   hint: answer only has simple integers and rational numbers using the digits 1,2, and 3.

2. $X(z) = \frac{z(z-1)}{(z+1)(z+\frac{1}{3})}$, $|z| > 1$

   hint: same as the above hint

Find inverse Z transforms of the following functions using Matlab-assisted PFD

3. $X(z) = \frac{4-3z^{-1}+3z^{-2}}{1-4z^{-1}-3z^{-2}+18z^{-3}}$, $|z| > 3$

   hints: answer only has integers using the digits 1,2, and 3
   beware of repeated roots!

4. $X(z) = 3+2z^{-1}+\frac{16z}{4z+2}$, $|z| > \frac{1}{2}$

   hint: you can do this by tables if you put the fraction in the standard form of a polynomial in z^{-1}

   hint: answer only has simple integers and rationals using the digits 1,2,3, and 4

5. Using long division by hand, find $x[0]$, $x[1]$ if

   $X(z) = \frac{3+z^{-1}}{6-z^{-1}+z^{-2}}$, causal $x[n]$

   hint: both are simple rational numbers between 0 and 1 using the digits 1,2, and 4.

6. What single Matlab command will return a vector containing $x[0]\ldots x[4]$ of the X(z) given in problem 5? Use it to find the values $x[0]\ldots x[4]$.

   hint: x[2] = Matlab's x(3) = -0.0417