2. (a) \( f(x) = (2x = 3)^3 = -27 + 54x - 38x^2 + 8x^3 \) so the sequence generated by \( f(x) \) is 
\(-27, 54, -38, 8, 0, 0, 0, \ldots \). In other words, \( f(x) \) generates the sequence \( a_0, a_1, a_2, a_3, \ldots \) with 
\( a_0 = -27, a_1 = 54, a_2 = -38, a_3 = 8, \) and \( a_i = 0 \) for \( i \geq 4 \).

(b) \( f(x) = x^4/(1-x) = x^4(1+x+x^2+x^3+\ldots) = x^4(\sum_{i=0}^{\infty} x^i) = 0 + 0x + 0x^2 + 0x^3 + \sum_{i=4}^{\infty} x^i \) so
the sequence generated by \( f(x) \) is \( 0, 0, 0, 1, 1, 1, 1, \ldots \). In other words, \( f(x) \) generates
the sequence \( a_0, a_1, a_2, a_3, \ldots \) with \( a_0 = a_1 = a_2 = a_3 = 0 \) and \( a_i = 1 \) for \( i \geq 4 \).

(c) \( f(x) = x^3/(1-x^2) = x^3(1 + x^2 + x^4 + x^6 + \ldots) = x^3 + x^5 + x^7 + x^9 + \ldots \) so the sequence
generated by \( f(x) \) is \( 0, 0, 0, 1, 0, 1, 0, 1, \ldots \). In other words, \( f(x) \) generates the sequence
\( a_0, a_1, a_2, a_3, \ldots \) with \( a_0 = a_1 = 0 \), and for \( j \geq 1 \), \( a_{2j+1} = 1 \) and \( a_{2j} = 0 \). We could also
write \( a_0 = a_1 = a_2 = 0 \), and for \( j \geq 2 \), \( a_{2j-1} = 1 \) and \( a_{2j} = 0 \).

(d) \( f(x) = 1/(1 + 3x) = 1 + (-3)x + (-3x)^2 + (-3x)^3 + \ldots = \sum_{i=0}^{\infty} (-1)^i 3^i x^i \) so the sequence
generated by \( f(x) \) is \( 1, -3, 9, -27, \ldots \). In other words, \( f(x) \) generates the sequence
\( a_0, a_1, a_2, a_3, \ldots \) with \( a_i = (-3)^i \) for \( i \geq 0 \).

(e) \( f(x) = 1/(3 - x) = (1/3)[1/(1 - x/3)] = (1/3)[1 + (x/3) + (x/3)^2 + (x/3)^3 + \ldots] = \sum_{i=0}^{\infty} (1/3)(1/3)^i x^i \) so the sequence generated by \( f(x) \) is \( 1/3, 1/9, 1/27, 1/81, \ldots \). In other
words, \( f(x) \) generates the sequence \( a_0, a_1, a_2, a_3, \ldots \) with \( a_i = (1/3)^{i+1} \) for \( i \geq 0 \).

(f) \( f(x) = 1/(1 - x) + 3x^7 - 11 = (1 + x + x^2 + x^3 + \ldots) + 3x^2 - 11 = -11 + 3x^2 + (\sum_{i=0}^{\infty} x^i) \) so
the sequence generated by \( f(x) \) is \( a_0, a_1, a_2, a_3, \ldots \) where \( a_0 = -10 \), \( a_7 = 4 \), and \( a_i = 1 \)
for all \( i > 0 \) with \( i \neq 7 \).