Find the first six terms of the sequence. $a_1 = -3$, $a_{n+1} = 2 \cdot a_n - 1$.

Solution.

In the second equation we can put n=2,3,4,5,6 and find first six terms of the sequence.

$$a_2 = a_{1+1} = 2 \cdot a_1 - 1 = 2 \cdot (-3) - 1 = -6 - 1 = -7$$

$$a_3 = a_{2+1} = 2 \cdot a_2 - 1 = 2 \cdot (-7) - 1 = -14 - 1 = -15$$

$$a_4 = a_{3+1} = 2 \cdot a_3 - 1 = 2 \cdot (-15) - 1 = -30 - 1 = -31$$

$$a_5 = a_{4+1} = 2 \cdot a_4 - 1 = 2 \cdot (-31) - 1 = -62 - 1 = -63$$

$$a_6 = a_{5+1} = 2 \cdot a_5 - 1 = 2 \cdot (-63) - 1 = -126 - 1 = -127$$

$$a_7 = a_{6+1} = 2 \cdot a_6 - 1 = 2 \cdot (-127) - 1 = -254 - 1 = -255$$

Answer: -3,-7,-15,-31,-63,-127,-255,…