NCERT 10.5.2 17Q

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Question: Find the 20th term from the last term of the AP: $3, 8, 13.....253$.

Solution:

As the 20th term is considered from last,

Parameter	Description	Value
$x(0)$	first term	253
d	common difference	$3 - 8 = -5$
$x(n)$	$(n+1)^{th}$ term	$(x(0) + nd)u(n)$
$u(n)$	unit step function	
$x(n)$	20th term	158

TABLE 1: Input table

From equation (**??**) and (**??**):

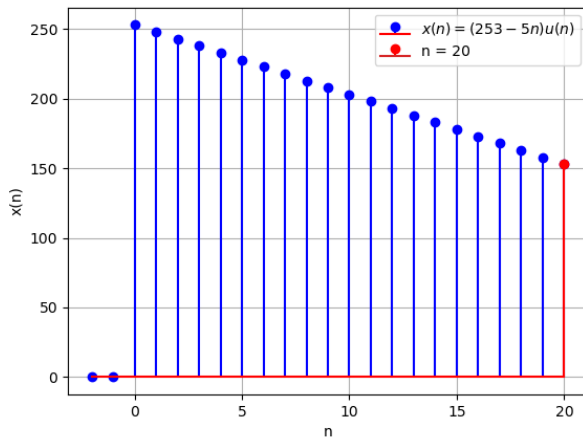$$X(z) = \frac{253}{1 - z^{-1}} + \frac{-5z^{-1}}{\left(1 - z^{-1}\right)^2}; \{|z| > 1\} \quad (1)$$

Fig. 1