

NCERT Mathematics 10.5.2 Q10

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Question: The 17th term of an AP exceeds its 10th term by 7. Find the common difference.

Solution:

Parameter	Description	Value
$x(0)$	First term of AP	
d	Common difference of AP	
$x(16) - x(9)$	The difference between 17th and 10th term of AP	7

Using the equation

$$x(n) = x(0) + n(d) \quad (1)$$

$$(x(0) + 16d) - (x(0) + 9d) = 7 \quad (2)$$

$$\implies d = 1 \quad (3)$$

$$y(n) = (x(0) + nd)u(n) \quad (4)$$

$$Y(z) = (x(0)) \cdot \frac{1}{1 - z^{-1}} + \frac{z^{-1}}{(1 - z^{-1})^2}; \quad |z| > 1 \quad (5)$$