Discrete Assignment
EE1205 Signals and Systems

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Question:

The 4th term of a G.P. is square of its second term, and the first term is -3. Determine its 7th term.

Solution:

Let, first term of this G.P. be a.
Given, the first term is -3.
i.e. a= -3 (given).......(1)
Let r be the common ratio of G.P.
Given that the fourth term of G.P. is square of its second term.

We know n^{th} term of a G.P. can be written as : $T_n = ar^{n-1}$......(2)
$T_4 = T_2^2$(Given)......(3)
substituting (2) in (3),
$ar^{4-1} = (ar^{2-1})^2$
$ar^3 = a^2 r^2$
r=a
r=-3 (from(1)).......(4)
$T_7 = ar^{7-1}$
from (1) and (4)
$T_7 = (-3)(-3)^6$
$T_7 = (-3)^7 = -2187$

So 7th term of the G.P. is -2187.