NCERT Discrete - 11.9.3.12

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Question : 11.9.3.12 The sum of the first three terms of a G.P is 39/10 and their product is 1. Find the common ratio and the terms.

Solution: Let the three terms of the G.P be a/r, a, ar.

Parameter	Value	Description
a		Second term
r		Common ratio
a^3	1	Product of terms
$\frac{a}{r} + a + ar$	$\frac{39}{10}$	Sum of terms

TABLE 0

INPUT PARAMETERS

$$a^3 = 1 \implies a = 1 \qquad (1)$$

$$\frac{1}{r} + 1 + r = \frac{39}{10} \qquad (2)$$

$$(5r - 2)(2r - 5) = 0 \qquad (3)$$

$$r = \frac{2}{5} \text{ or } \frac{5}{2} \qquad (4)$$

1) If $r = \frac{2}{5}$, then terms are $\frac{5}{2}$, 1, $\frac{2}{5}$.
2) If $r = \frac{5}{2}$, then terms are $\frac{2}{5}$, 1, $\frac{5}{2}$.