Assignment 1

Velma Dhatri Reddy

March 30, 2022

ICSE 10 2019

Question: 8 (a)
The sum of the first three terms of an Arithmetic Progression (A.P.) is 42 and the product of the first and third term is 52. Find the first term and the common difference.

Solution:
Let the first three terms of the arithmetic expression be $a-d, a, a+d$.

Given,
Sum of the first three terms is 42.

$$\begin{aligned}
&\implies a-d+a+a+d=42\\
&\implies 3\times a=42\\
&\implies a=14
\end{aligned}$$

Product of the first and third term is 52.

$$\begin{aligned}
&\implies (a-d)\times(a+d)=52\\
&\implies a^2-d^2=52\\
&\implies d^2=a^2-52\\
&\qquad =14^2-52\\
&\qquad =144\\
&\implies d=\pm\sqrt{144}\\
&\qquad =\pm 12
\end{aligned}$$

Case 1:
Common difference $(d)=12$

First term $(a - d) = 14 - 12 = 2$

Case 2:
Common difference $(d) = -12$
First term $(a - d) = 14 + 12 = 26$