

Ex 5.3

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$$\textcircled{ii} \quad S_n = 4n - n^2$$

$$\begin{aligned} S_1 &= 4 \times 1 - 1^2 \\ &= 4 - 1 \\ &= 3 \end{aligned}$$

$$\begin{aligned} \therefore a_1 &= 3 \\ S_2 &= 4 \times 2 - 2^2 \\ &= 8 - 4 \\ &= 4 \\ S_2 &= 4 \end{aligned}$$

$$a_1 + a_2 = 4$$

$$3 + a_2 = 4$$

$$\begin{aligned} \Rightarrow a_2 &= 4 - 3 \\ &= 1 \end{aligned}$$

$$\begin{aligned} d &= a_2 - a_1 \\ &= 1 - 3 \\ &= -2 \end{aligned}$$

$$\begin{aligned} a_3 &= a + 2d \\ &= 3 + 2 \times (-2) \\ &= -1 \end{aligned}$$

$$\begin{aligned} a_{10} &= a + 9d \\ &= 3 + 9(-2) \\ &= 3 - 18 \\ &= -15 \end{aligned}$$

$$\begin{aligned} a_n &= a + (n-1)d \\ &= 3 + (n-1)(-2) \\ &= 3 - 2n + 2 \\ &= 5 - 2n \end{aligned}$$