

Algebra II Worksheet #5 Unit 9 Selected Homework Solutions

Find S_5 for each sequence described below.

$$\begin{aligned} 2. \quad a_n &= 2^n & S_5 &= 2^1 + 2^2 + 2^3 + 2^4 + 2^5 \\ & & S_5 &= 2 + 4 + 8 + 16 + 32 \\ & & S_5 &= 62 \end{aligned}$$

$$\begin{aligned} 4. \quad a_n &= 2(3)^{n-1} & S_5 &= [2(3)^0] + 2(3)^1 + [2(3)^2] + [2(3)^3] + [2(3)^4] \\ & & S_5 &= 2 + 6 + 18 + 54 + 162 \\ & & S_5 &= 242 \end{aligned}$$

$$\begin{aligned} 6. \quad a_{n+1} &= .5a_n \quad ; \quad a_1 = 4 & S_5 &= 4 + 2 + 1 + 0.5 + 0.25 \\ & & S_5 &= 7.75 \end{aligned}$$

$$\begin{aligned} 8. \quad a_{n+1} &= .1a_n \quad ; \quad a_1 = .3 & S_5 &= 0.3 + 0.03 + 0.003 + 0.0003 + 0.00003 \\ & & S_5 &= 0.33333 \end{aligned}$$

Evaluate each of the following sums.

$$\begin{aligned} 10. \quad \sum_{i=1}^3 2^i &= 2^1 + 2^2 + 2^3 \\ &= 2 + 4 + 8 = 14 \end{aligned}$$

$$\begin{aligned} 12. \quad \sum_{k=3}^6 (2k+1) &= [2(3)+1] + [2(4)+1] + [2(5)+1] + [2(6)+1] \\ &= 7 + 9 + 11 + 13 = 40 \end{aligned}$$

$$\begin{aligned} 14. \quad \sum_{j=1}^{100} j &= \overbrace{1 + 2 + 3 + \dots + 98 + 99 + 100} \\ &= (50)(101) = 5050 \end{aligned}$$