

Analysis Quiz

4.5.2013

Sequence and series

Part 1. Multiple guess. Place answers in the blank provided.

19. Name Key

For problems 1 - 8 classify each as (A) Arithmetic, (G) Geometric, (N) Neither.

N 1. $t_n = \cos(n\pi)$

A 2. 17, 25, 33, 41, 49, ...

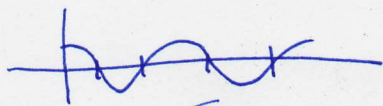
G 3. $\begin{cases} t_1 = 3 \\ t_n = \frac{1}{5}t_{n-1} \end{cases}$

A 4. $t_n = 2n - 5$

N 5. $\frac{3}{2}, \frac{4}{3}, \frac{5}{4}, \frac{6}{5}, \frac{7}{6}, \dots$

A 8. 7, 10, 13, 16, ...

N 9. $\frac{3}{2}, \frac{4}{5}, \frac{5}{10}, \frac{6}{17}, \frac{7}{26}, \dots$



$t_n = t_1 + (n-1)d$

$2148 = 13 + (n-1) \cdot 1$

$2136 = n$

$13 + 14 + 15 + \dots + 2146 + 2147 + 2148 =$

$S_{2136} = \frac{2136(13+2148)}{2}$

$= 2307948$

$15 + 18 + 21 + \dots + 2148 =$

$t_n = t_1 + (n-1)d \quad S_{712} = \frac{712(15+2148)}{2}$

$2148 = 15 + (n-1)3$

$711 = n-1$

$712 = n$

$S_{712} = 770,028$

$= 1,537,920$

OK

$27 + 33 + 39 + \dots + 4293$

$4293 = 27 + (n-1)6$

$712 = n-1$

$712 = n$

$S_{712} = \frac{712(27+4293)}{2}$

$= 1,537,920$

For problems 10 - 11 classify each of the following as (A) sequence or (B) series.

A 12. 1, 2, 3, 4, 5, 6, ...

B 13. $1+2+3+4+5+\dots+55$

$t_n = t_1 + (n-1)d$

$751 = 163 + (n-1)1$

$588 = n-1$

$589 = n$

$S = \frac{n(t_1+t_n)}{2}$

$= \frac{589(163+751)}{2}$

Find the following sums.

269,173 14. $163+164+165+\dots+751$

120 17. In how many ways can a 10 member club choose 3 committee members?

- A. ${}_{10}P_3$ B. ${}_{10}C_3$ C. 10^3 D. 3^{10} E. none of these are correct.

$\frac{10 \cdot 9 \cdot 8}{6}$

1,537,920 18. Find the sum: $13+14+16+17+19+20+\dots+2146+2147$

87768 21. Find the following sum; $252 + 257 + 262 \dots + 967$

$t_n = t_1 + (n-1)d$

~~$967 = 252 + (n-1)5$~~

$967 = 252 + (n-1)5$

$143 = n-1$

$144 = n$

$S_{144} = \frac{n(t_1+t_n)}{2} = \frac{144(252+967)}{2}$