Questions from Homework

④ $t_4 = 8x^3$ $\quad t_9 = 256x^8$

$t_4 = ar^3$ $\quad t_9 = ar^8$

$ar^3 = 8x^3$ $\quad ar^8 = 256x^8$

$\frac{ar^8 = 256x^8}{ar^3 = 8x^3}$

$r^5 = 32x^5$

$r = 2x$

$ar^3 = 8x^3$

$a(2x)^3 = 8x^3$

$a(8x^3) = 8x^3$

$a = 1$

$t_n = ar^{n-1}$

$t_n = (1)(2x)^{n-1}$

$t_n = (2x)^{n-1}$

⑦ $52, \_\_, \_\_, \_\_, \_\_, \#$

$r = 0.8$

$a = 52$

$S_6 = ?$

$S_6 = \frac{52(0.8^6 - 1)}{0.8 - 1}$

$= \frac{52(-0.7379)}{-0.2}$

$= 192$

⑤ $a = 1$

$d = 1$

$n = 12$

$t_{12} = 12$

$S_{12} = \frac{12}{2}(1 + 12)$

$= 6(13)$

$= 78$

Sigma Notation

For the ***sequence*** 1, 2, 4, 8, 16, 32, 64 there is an associated sum called a ***series.***

The Greek symbol ∑ (sigma) is used to write the series in compact form.

$$1+2+4+\ldots+64 = \sum_{n=1}^{7} 2^{n-1}$$

the terms form a geometric sequence with a = 1, r = 2, $t_n = 1(2)^{n-1}$

This symbol is read as "the sum of the terms of the sequence given by $t_n=2^{n-1}$ from n = 1 to n = 7"

We can also say:

$$S_7 = \sum_{n=1}^{7} 2^{n-1}$$

Find each sum:

$$S_4 = \sum_{n=1}^{4} n^2$$

$$= (1)^2 + (2)^2 + (3)^2 + (4)^2$$

$$= 1 + 4 + 9 + 16$$

$$= 30$$

$$S_5 = \sum_{n=1}^{5} 3n + 2$$

$$= 5 + 8 + 11 + 14 + 17$$

$$= 55$$

$3n + 2$

$= 3(4) + 2$

$= 14$

Write the following series in ***Sigma Notation***

$2+5+8+11+14.$

What type of series is it?
Find t_n

$a = 2$
$d = 3$

$t_n = 2 + (n-1)(3)$
$= 2 + 3n - 3$
$= 3n - 1$

Sigma Notation

$$\sum_{n=1}^{5} 3n-1$$

$$\sum_{n=3}^{5} 2n+3$$

$= 2(3)+3 + 2(4)+3 + 2(5)+3$

$= 9 + 11 + 13$

$= 33$

Homework