Classify the following as Arithmetic, Geometric, Both, or Neither.

$$13,\ 20,\ 27,\ 34, \ldots$$

$$\frac{3}{4}, \frac{4}{7}, \frac{5}{12}, \frac{6}{19}, \frac{7}{28}, \ldots$$

$$\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}, \ldots$$

$$\begin{cases} t_1 = 6 \\ t_n = \frac{1}{4} t_{n-1} \end{cases}$$

$$t_n = \cos\left(\frac{n\pi}{2}\right)$$

$$t_n = 2n^2 - 5$$

$$t_n = \tan(n\pi)$$

$$t_n = \sin\left(\frac{n\pi}{2}\right)$$

Who was Carl Gauss and what shortcut method adding arithmetic series is he identified with?

Derive the formula for the sum of the first n terms of an arithmetic series

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

Derive the formulas for sum of finite arithmetic and geometric series.

Classify the following series, and then find the sum.

$$1+2+3+5+6+7+9+...+1119$$

State the formula for adding an infinite geometric series, and tell the conditions under which it works.

Mention Zeno!

Find the sum of the following infinite series

We might try adding the first few terms by hand, OR writing a calculator program, and then try the formula and see if they agree!!

$$\frac{2}{9}+\frac{8}{63}+\frac{32}{441}+\frac{128}{3087}+\ldots$$

Estimate the value of sin(21.5 degrees) using

$$\sin(x) = \frac{x}{1!} - \frac{x^3}{3!} + \frac{x^5}{5!} \mp \ldots$$

Give an explicit formula and a recursive formula for each of the following:

7, 10, 13, 16, . . .

$$\frac{3}{4},\frac{4}{7},\frac{5}{12},\frac{6}{19},\frac{7}{28},\ldots$$

11, 101, 1001, 10001, 100001, . . .

Classify the following as arithmetic, geometric, both, or neither. Then find the sum if possible.

$$\frac{2}{4}+\frac{3}{8}+\frac{4}{16}+\frac{5}{32}+\frac{6}{64}+\ldots$$

Ok, so it is neither.
let's try
- adding the first few terms
- writing a computer program
- being brilliant

$$\frac{1}{10^0}+\frac{2}{10^1}+\frac{3}{10^2}+\frac{4}{10^3}+\frac{5}{10^4}+\ldots$$