For the following sequences take partial sums in Maple and see if the sequence of partial sums converge.As an example consider .333333... whish is the sum of .3 +.03 +.003 + .0003 +.... The sequence we are summing is .3,.03, .003,.0003 .... The sequence of partial sums are .3,.3+.03, .3+.03+.003,.3+.03+.003+.0003 which can be written as the sequence .3,.33,.333,.3333... which converges to 1/3. To write this example in Maple we have (you must enter this to work)

```
> Digits := 50;
> s := <seq(evalf(3·10^(-n)), n = 1 ..1000)>;
    # when you double click table open up to see the
    scientific notation e-5 is 10^(-5)
> s[3];#etc
> partialSums := <seq(add(s[i], i = 1 .. n), n = 1 ..1000)>;
```

We would really like **to** ***write the above as*** $\left\langle seq\left(\sum_{i=1}^{n} s[i], n = 1 ..1000\right)\right\rangle$**;** ***but*** $\sum_{i=k}^{n} f$ ***tries*** **to** ***actually*** **do** ***the sum***
. ***It works*** **for** ***this example but*** **not in** ***general*** **.** ***It is*** **not** ***quite the same thing as*** **in** ***mathematics*** **and** ***can confuse the issue***
. ***In mathemaics we should write this with the*** **sigma** ***sign***
. ***We can*** **use** ***the*** **sigma** ***notation*** **to** ***get the sum***

to *infinity* if *we just put* in *our formula* for *the sequence*.

> $$\sum_{i=1}^{infinity} 3 \cdot 10^{-i};$$

$$\frac{1}{3} \qquad (1)$$

Problems:

> 1. *Let s be the sequence* $1, \frac{1}{2}, \frac{1}{3}, ..$

.. *where the nth term is* $\frac{1}{n}$.

> 2. *Let s be the sequence* $1, \frac{1}{4}, \frac{1}{9}, ..$

.. *where the nth term is* $\frac{1}{n^2}$

> 3. *Let s be the sequence* $\frac{1}{\ln(1)}, \frac{1}{\ln(2)}, \frac{1}{\ln(3)}$ ..

. *where the nth term is* $\frac{1}{\ln(n)}$

> 4. *Let s be the sequence* $\frac{1}{e^1}, \frac{1}{e^2}, \frac{1}{e^3}$ ..

. *where the nth term is* $\frac{1}{e^n}$.

> 5. *Let s be the sequence* $88 \cdot \left(\frac{4}{5}\right), 88 \cdot \left(\frac{4}{5}\right)^2, 88 \cdot \left(\frac{4}{5}\right)^3$ ..

. *where the nth term is* $88 \cdot \left(\frac{4}{5}\right)^n$

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