**CHAPTER 2 : Lesson 2**

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| **Objective :** | **The geometric series**: This is funky! You know how to compute xn element-by-element for a vector x and a scalar exponent n. How about computing nx, and what does it mean? The result is again a vector with elements nx1,n x2,n x3 etc. The sum of a geometric series 1+r +r2 +r3 +...+rn approaches the limit 1 1−r for r<1 asn →∞. Create a vector n of 11 elements from 0 to 10. Take r =0 .5 and create another vector x =[ r0 r1 r2 ... rn] with the command x = r.^n . Now take the sum of this vector with the command s = sum(x) (s is the sum of the actual series). Calculate the limit 1 1−r and compare the computed sum s. Repeat the procedure taking n from 0 to 50 and then from 0 to 100. |
| **MATLAB**  **Code:** | n = 0:10;  r = 0.5;  x = r.^n;  s1 = sum(x)  n=0:50;  x=r.^n;  s2=sum(x)  n=0:100;  x=r.^n;  s3=sum(x) |
| **Output:** | s1 = 1.9990  s2 = 2.0000  s3 = 2 |