College of Engineeering Pune
Department of Mathematics
MA-19003:Univariate calculus
Tutorial on Unit 3

(1) Which of the following sequences converges and which diverge?Find the limit of each convergent sequence and justify your answers.

$$(a)a_n = (-1)^n(1-\frac{1}{n})(e)a_n = \frac{lnn}{n^{\frac{1}{n}}}(j)a_n = (n+4)^{\frac{1}{n+4}}$$

(a) $a_n = (-1)^n(1-\frac{1}{n})$ (e) $a_n = \frac{lnn}{n^{\frac{1}{n}}}$ (j)$a_n = (n+4)^{\frac{1}{n+4}}$

(b)$a_n = \frac{n+(-1)^n}{n}$ (f)$a_n = \sin(\frac{\pi}{2}+\frac{1}{n})$ (k)$a_n = \sqrt[n]{4^n n}$ (l)$a_n = \ln(n)-\ln(n+1)$

(c)$a_n = \frac{n^2}{e^n}$ (g)$a_n = n\pi\cos(n\pi)$ (m)$a_n = \frac{n!}{10^6 n}$

(d)$a_n = (\frac{3n+1}{3n-1})^n$ (h)$\tan^n$ (i)$a_n = (\frac{1}{n})^{\frac{1}{\ln n}}$ (j)$a_n = \frac{\ln(n+1)}{\sqrt{n}}$

$$a_n = \frac{\ln(n+1)}{\sqrt{n}}$$

Assignment 1