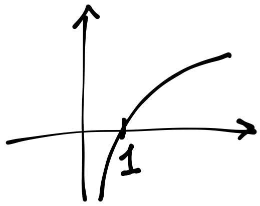
11/10/2018



22) $$\lim_{n\to\infty} \ln\left(1+\underbrace{\frac{2}{n+2}}_{0}\right) = \ln(1) = 0$$

21) $$\lim_{n\to\infty} \ln(\underbrace{n^2}_{+\infty}+\underbrace{n}_{+\infty}) = \ln(+\infty) = +\infty$$

31) $$\lim_{n\to\infty} (\underbrace{e^n}_{+\infty}+\underbrace{n}_{+\infty}) = +\infty$$

35) $$\lim_{n\to\infty} \log_2\left(\overbrace{\frac{4n+1}{n}}^{\frac{\infty}{\infty}}\right) = \log_2 4 = 2$$

$$\frac{4n+1}{n} = \frac{\cancel{n}\left(4+\overbrace{\frac{1}{n}}^{0}\right)}{\cancel{n}} \to 4$$

alternativa

$$\log_2\left(\frac{4n+1}{n}\right) = \log_2\left(\frac{4n}{n}+\frac{1}{n}\right) = \log_2\left(4+\overbrace{\frac{1}{n}}^{0}\right) \to \log_2(4)$$

36) $$\lim_{n\to\infty} \log_{\frac{1}{3}} \frac{9n}{9+n} = \log_{\frac{1}{3}} 9 = -2$$

$$\frac{9n}{9+n} = \frac{9\cancel{n}}{\cancel{n}\left(\underbrace{\frac{9}{n}}_{\to 0}+1\right)} \to 9$$

27) $\lim_{n\to\infty} (n + \sin n) = +\infty$ perché n cresce "quanto vuole" per $n \to +\infty$, mentre $\sin n$ si mantiene sempre tra -1 e 1

CHIARAMENTE

$$\left.\begin{array}{l} \lim_{n\to\infty} \sin n \\ \lim_{n\to\infty} \cos n \end{array}\right] \text{NON ESISTONO!!!...}$$

perché $\sin n$ e $\cos n$ oscillano tra -1 e 1

26) $\lim_{n\to\infty} \cos(n+1) = $ NON ESISTE

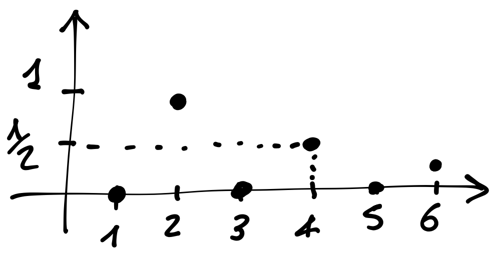
37) $\lim_{n\to\infty} \sin \frac{n+1}{n^2+1} = \sin(0) = 0$

$$\frac{n+1}{n^2+1} = \frac{\cancel{n}\left(1+\overset{0}{\frac{1}{n}}\right)}{\underset{+\infty}{n^{\cancel{2}}}\left(1+\underset{0}{\frac{1}{n^2}}\right)} \to \frac{1}{+\infty} = 0$$

38) $\lim_{n\to\infty} \cos \frac{3}{3n^3+1} = \cos\left(\frac{3}{+\infty}\right) = \cos(0) = 1$

28-29)

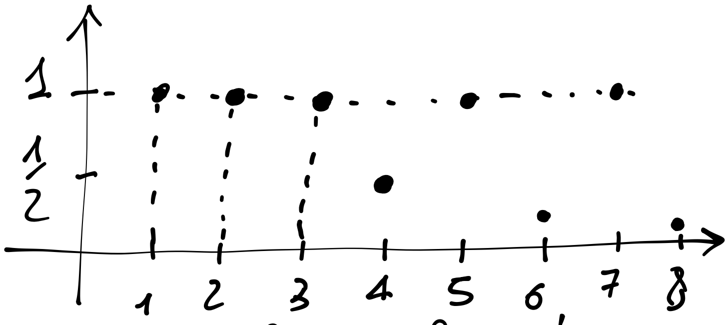
$$a_n = \begin{cases} \frac{2}{n} & \text{se } n \text{ pari} \\ 0 & \text{se } n \text{ dispari} \end{cases}$$



$a_1 = 0 \quad a_2 = 1 \quad a_3 = 0 \quad a_4 = \frac{1}{2} \quad a_5 = 0 \quad a_6 = \frac{1}{3} \quad \ldots\ldots$

$$\lim_{n\to\infty} a_n = 0$$

$$b_n = \begin{cases} \frac{2}{n} & n \text{ pari} \\ 1 & n \text{ dispari} \end{cases}$$



$b_1 = 1 \quad b_2 = 1 \quad b_3 = 1 \quad b_4 = \frac{1}{2} \quad b_5 = 1 \quad b_6 = \frac{1}{3} \quad \dots\dots$

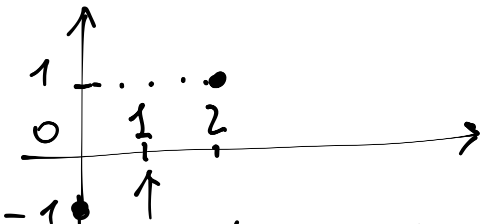
$\lim_{n \to \infty} b_n$ NON ESISTE!

18) $$\lim_{n \to \infty} \frac{5 + n - n^2 + n^3}{1 - 2n^3} = \lim_{n \to \infty} \frac{\cancel{n^3}\left(\overbrace{\frac{5}{n^3}}^{\to 0} + \overbrace{\frac{1}{n^2}}^{\to 0} - \overbrace{\frac{1}{n}}^{\to 0} + 1\right)}{\cancel{n^3}\left(\underbrace{\frac{1}{n^3}}_{\to 0} - 2\right)} = \frac{1}{-2} = -\frac{1}{2}$$

$$a_n = \frac{1}{n-1}$$

$a_0 = -1 \qquad a_1$ NON ESISTE!!

$a_2 = \frac{1}{2-1} = 1$



non c'è nulla!!!