# AM1b, a.a. 2002-2003 - Esercizi 3

Silvia Mataloni, Giampiero Palatucci

24 marzo 2003

Calcolare i seguenti limiti:

**1.** $\lim_{n\to\infty}(e^n-2^n)$; $\lim_{n\to\infty}\dfrac{2^{n-2}-3^n}{e^{n+1}}$; $\lim_{n\to\infty}\dfrac{1}{\sqrt[n]{3}}$; $\lim_{n\to\infty}\sqrt[n]{2n^2}$; $\lim_{n\to\infty}\sqrt[n]{3^n+4^n}$.

**2.** $\lim_{n\to\infty}\left(1+\dfrac{1}{3n}\right)^n$; $\lim_{n\to\infty}\left(\dfrac{n+1}{n}\right)^{2n}$.

**3.** $\lim_{n\to\infty}\left(\dfrac{n^2+2}{n^2-n+2}\right)^n$; $\lim_{n\to\infty}\left(\dfrac{n^2-n}{n^2-n+1}\right)^{n^2}$; $\lim_{n\to\infty}\left(\dfrac{n^2-2}{n^2+n-1}\right)^{n^2}$.

**4.** $\lim_{n\to\infty} n\sin\frac{2}{n}$; $\lim_{n\to\infty}\left(n^2-n^2\cos\frac{3}{n}\right)$; $\lim_{n\to\infty} n^2\tan\frac{1}{n}$; $\lim_{n\to\infty} n^2\left(\tan\frac{2}{n}-\sin\frac{2}{n}\right)$.

**5.** $\lim_{n\to\infty} n\left(\dfrac{1}{2}+\dfrac{1}{n}\right)^n\sin\frac{3}{n}$; $\lim_{n\to\infty}\dfrac{\tan\frac{1}{n}}{\tan\frac{2}{n^2}}$; $\lim_{n\to\infty}\dfrac{\ln(n^2+n+1)-2\ln n}{1-\cos\frac{1}{n}}$.

**6.** $\lim_{n\to\infty}(\sqrt[3]{n^3+2}-n)$; $\lim_{n\to\infty} n(\sqrt[3]{n+1}-\sqrt[3]{n})$; $\lim_{n\to\infty}\dfrac{e^{\sqrt{\ln n^3+(\ln n)^2}}}{n^2}$.

**7.** $\lim_{n\to\infty}\sqrt[n]{n\ln n}$; $\lim_{n\to\infty}\dfrac{2+\cos n}{n}$; $\lim_{n\to\infty}(\sin^2(n+3)-n^2)$.