Prova scritta di METODI MATEMATICI della FISICA
INTRODUZIONE

28 Novembre 2006

Risultati COMPITO 1

1. $y(x) = \frac{2}{2\alpha-1}\left[(2\alpha-3)e^{x/2} + \frac{1}{\alpha}(e^{\alpha x} + 2\alpha - 1)\right]$ se $\alpha \neq 0, 1/2$;

   $y(x) = 2\left(3e^{x/2} - x - 2\right)$ se $\alpha = 0$;

   $y(x) = 2\left[(x-1)e^{x/2} + 2\right]$ se $\alpha = 1/2$.

2. $I = 2\pi i \left(\frac{4}{\pi} - 1\right)$.

3. $f(x) = \frac{L}{8} + \sum_{n=1}^{\infty} \frac{L}{n\pi}\left[\sin\frac{n\pi}{2} + \frac{2}{n\pi}\left(\cos\frac{n\pi}{2} - 1\right)\right]\cos\frac{n\pi x}{L}$.

Risultati COMPITO 2

1. $u(x) = \frac{1}{3(\beta-3)}\left[(\beta-4)e^{3x} + \frac{3}{\beta}e^{\beta x} - \frac{3}{\beta} + 1\right]$ se $\beta \neq 0, 3$;

   $u(x) = \frac{1}{9}\left(4e^{3x} - 3x - 1\right)$ se $\beta = 0$;

   $u(x) = \frac{1}{9}\left[(3x+2)e^{3x} + 1\right]$ se $\beta = 3$.

2. $I = 2\pi i \left(1 - \frac{4}{\pi}\right)$.

3. $f(t) = \sum_{n=1}^{\infty} \frac{2T}{n^2\pi^2}\left(\sin\frac{n\pi}{2} - \frac{n\pi}{2}\cos\frac{n\pi}{2}\right)\sin\frac{n\pi t}{T}$.