

METODI MATEMATICI della FISICA (INTRODUZIONE)
RISULTATI della prova scritta del 5 Aprile 2005

COMPITO 1

1. $y(t) = 2\theta(t) + 3\theta(t-1)(e^{1-t} + t - 2)$.
2. $F(x) = \left(\frac{1}{2} + \frac{2}{\pi}\right) \sin \frac{\pi x}{L} + \frac{2}{\pi} \sum_{k=2}^{\infty} \left(1 + \frac{k}{1-k^2} \cos \frac{k\pi}{2}\right) \sin \frac{k\pi x}{L}$
3. $B = -\sqrt{5}$

COMPITO 2

1. $y(x) = \theta(x)(1 - e^{-x}) - 4\theta(x-2)(e^{2-x} + x - 3)$.
2. $F(t) = \frac{1}{2} + \frac{1}{\pi} + \frac{1}{\pi} \cos \frac{\pi t}{T} + \frac{2}{\pi} \sum_{k=2}^{\infty} \frac{k \cos k\pi + \sin k\pi/2}{k(1-k^2)} \cos \frac{k\pi t}{T}$
3. $C = \sqrt{5}$

COMPITO 3

1. $u(t) = \theta(t) - 2\theta(t-3)(e^{3-t} + t - 4)$.
2. $F(x) = -\frac{1}{2} - \frac{1}{\pi} - \frac{1}{\pi} \cos \frac{\pi x}{L} - \frac{2}{\pi} \sum_{k=2}^{\infty} \frac{k \cos k\pi + \sin k\pi/2}{k(1-k^2)} \cos \frac{k\pi x}{L}$
3. $\beta = \sqrt{2}$

COMPITO 4

1. $u(x) = 2\theta(x)(1 - e^{-x}) + \theta(x-4)(e^{4-x} + x - 5)$.
2. $F(t) = -\left(\frac{1}{2} + \frac{2}{\pi}\right) \sin \frac{\pi t}{T} - \frac{2}{\pi} \sum_{k=2}^{\infty} \left(1 + \frac{k}{1-k^2} \cos \frac{k\pi}{2}\right) \sin \frac{k\pi t}{T}$
3. $\alpha = -\sqrt{2}$