Nuclear Reactor Physics : Neutronics

Useful formulae

1. Definition of a derivative

When $x \to 0$:

$$\frac{f(x+dx)-f(x)}{dx} = f'(x)$$

2. Logarithm and integration

$$\int_a^b \frac{f'(x)}{f(x)}.dx = \ln\big(f(b)\big) - \ln\big(f(a)\big)$$

$$e^{\ln(x)} = x$$

3. Mean of a probability distribution

$$< x > = \int_0^\infty x.f(x).dx$$

In that case, $f(x)$ is the probability density function associated with the probability distribution of x.

4. Integration by parts

$$\int_a^b u'.v = [u.v]_a^b - \int_a^b u.v'$$

5. Limits

$$\lim_{x\to\infty}(e^{-\Sigma.x}) = 0$$

$$\lim_{x\to\infty}(x.e^{-\Sigma.x}) = 0$$