

In this assignment, we will work with a probability density function (pdf) of the normal distribution

$$p(x|\mu, \sigma) = \frac{1}{\sqrt{2\pi\sigma^2}} e^{-\frac{(x-\mu)^2}{2\sigma^2}}$$

where $-\infty < x < \infty$ and $\sigma > 0$. A user will provide two parameters (mean μ and standard deviation σ) and a number (1 or 2) as an input. You will plot normal pdf's with the parameters using the formula above **without using a built-in function such as norm.pdf()**.

Requirement:

- Receive mean, standard deviation, and a number as input.
- Increment of 0.01 in the x-axis.
- Range of the x-axis: $[\mu-5*\sigma, \mu+5*\sigma]$
- Range of the y-axis: from 0 to 300% of the peak of the pdf.
- Plot of the original pdf with parameters (μ, σ) . (color='blue')
- If input==1, provide the following plots
 - Plot of the pdf with parameters $(\mu-\sigma, \sigma)$. (color='yellow')
 - Plot of the pdf with parameters $(\mu-2\sigma, \sigma)$. (color='red')
- If input==2, provide the following plots
 - Plot of the pdf with parameters $(\mu, 0.8*\sigma)$. (color='yellow')
 - Plot of the pdf with parameters $(\mu, 0.6*\sigma)$. (color='red')
- Three pdf's should be on the same plot.
- Use appropriate labels for each plot. You may use built-in functions for the plot and label commands.