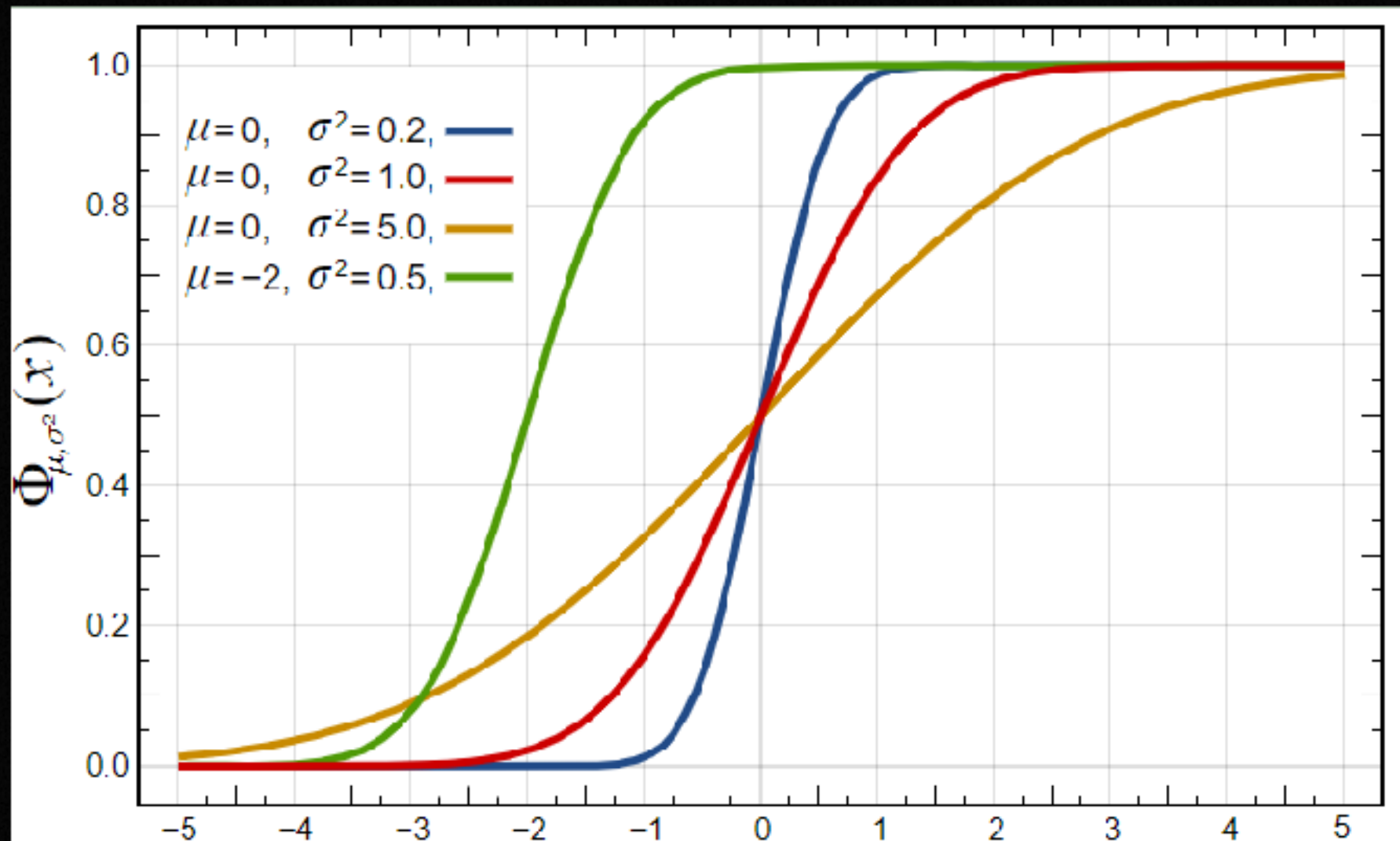# CDF of Gaussian Distribution

CDF of a Normal distribution looks like follows
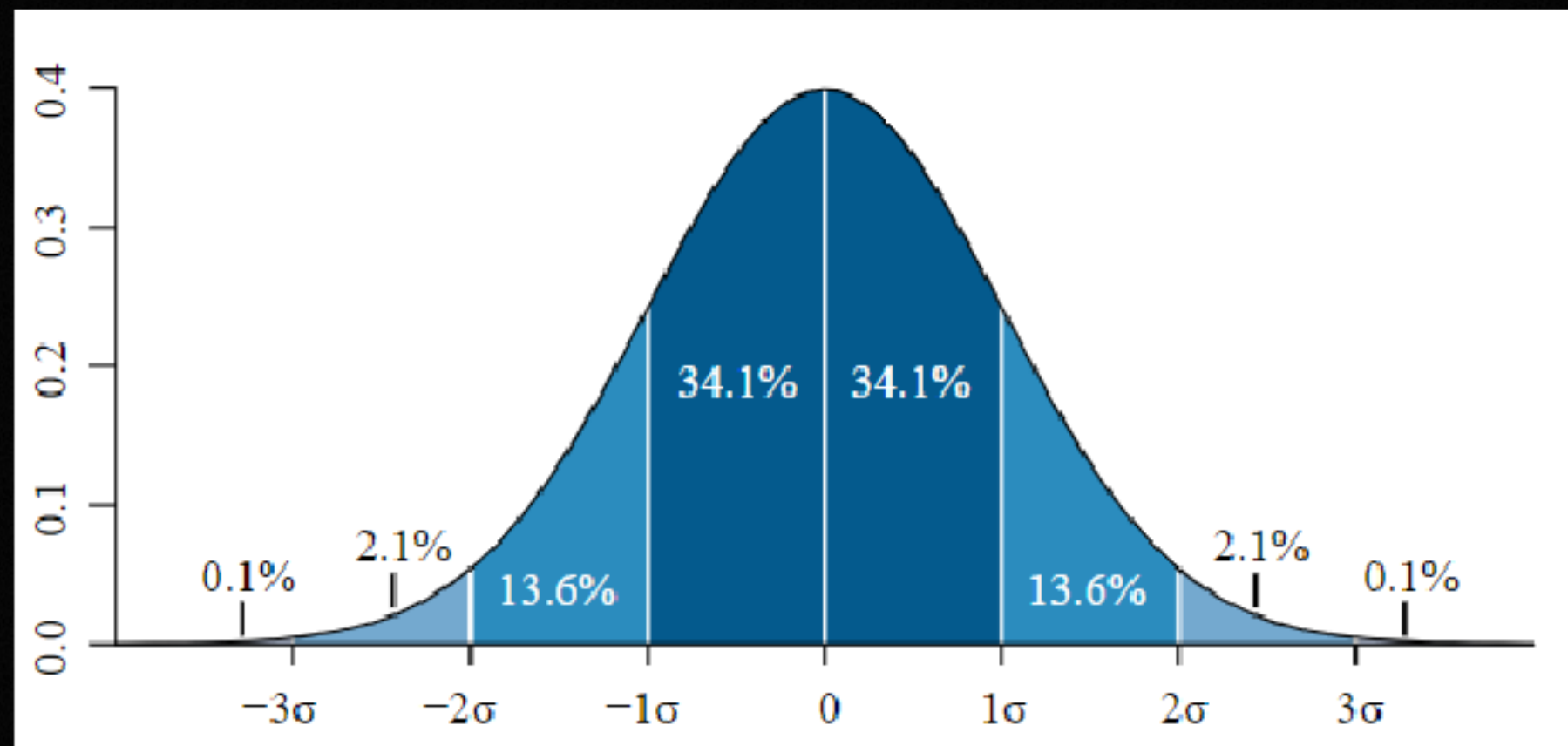

we can notice following points from the graph:
1. p(x<= μ) = 0.5 for N(μ, σ^2)
2. p(x>= μ) = 0.5 for N(μ, σ^2)
3. As σ^2 increases the curve moves away from μ.

$$\frac{1}{2}\left[1 + \mathrm{erf}\left(\frac{x - \mu}{\sigma\sqrt{2}}\right)\right]$$

one intresting poin about Gaussian distribution is it follows 68-95-99.7 rule

68% of points lie in between μ-σ to μ+σ

95% of points lie in between μ-2σ to μ+2σ

99.7% of points lie in between μ-3σ to μ+3σ