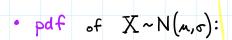
THE NORMAL DISTRIBUTION

· Describes the distributions of many physical quantities (e.g. lengths, weights, measurements).





• pdf of
$$X \sim N(n,\sigma)$$
: $f(x', n, \sigma) = \frac{1}{\sigma \sqrt{2\pi}} e^{-(x-n)^2/(2\sigma^2)}$

• cdf of
$$X \sim N(0,1)$$
: $\overline{\Phi}(x) = \int_{-\infty}^{\infty} \frac{1}{\sqrt{2\pi}} e^{-\gamma^2/2} d\gamma$

• mgf of
$$X \sim N(0,1)$$
: $M_X(t) = e^{\mu t + \frac{\sigma^2 t^2}{2}}$