



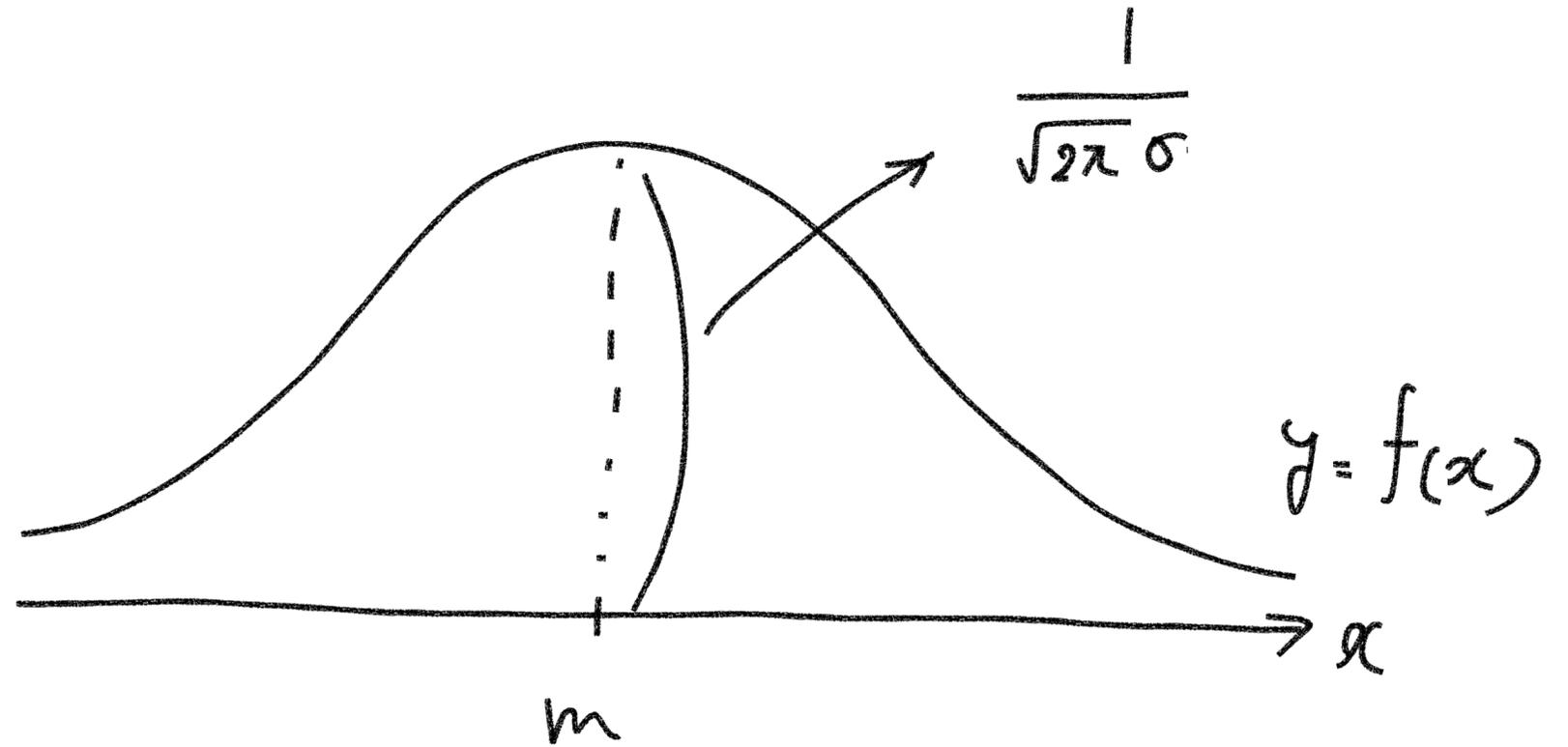
数学B

第2章 統計的な推測

正規分布①



$$f(x) = \frac{1}{\sqrt{2\pi}\sigma} e^{-\frac{(x-m)^2}{2\sigma^2}}$$



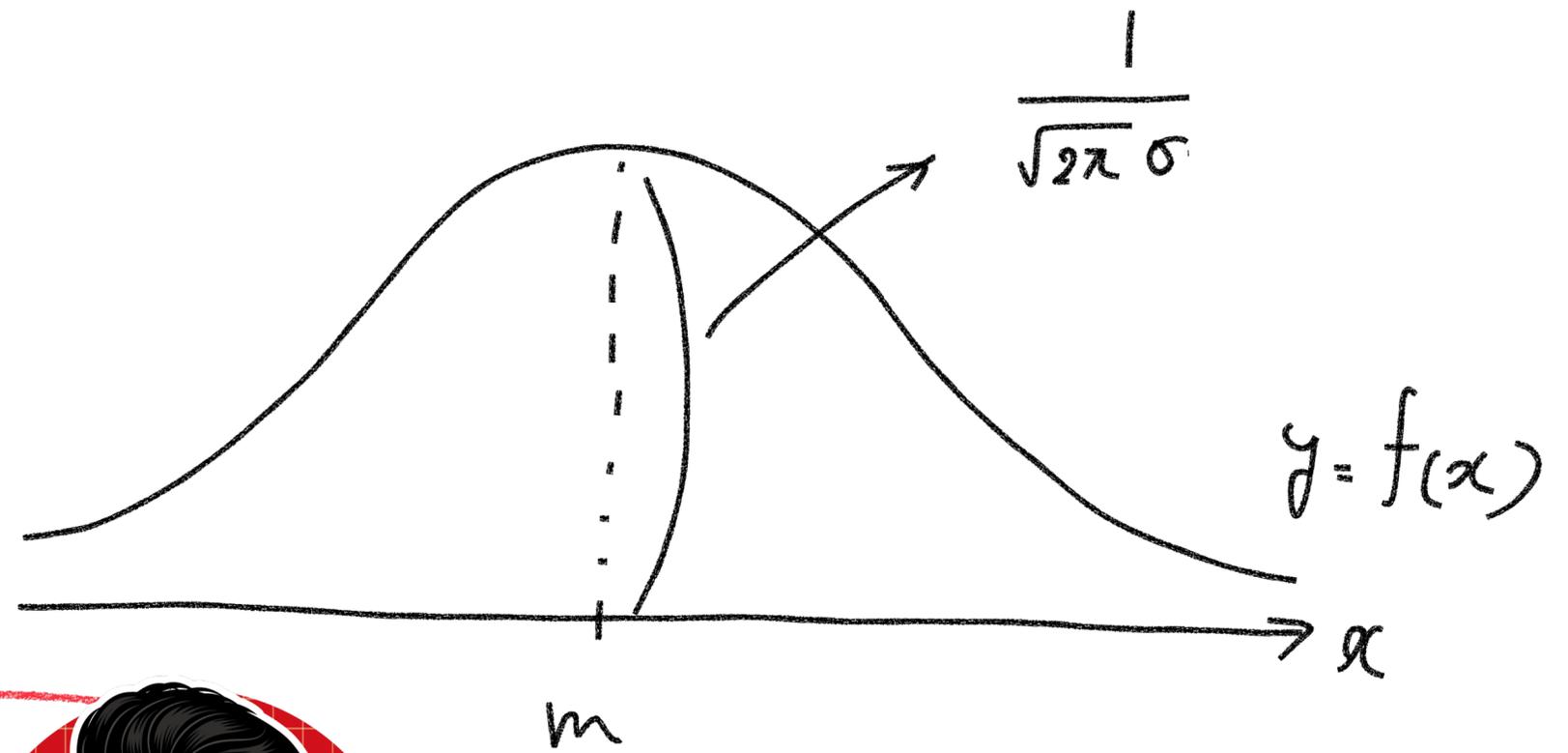
連続型確率変数Xの

確率密度関数が $f(x) = \frac{1}{\sqrt{2\pi}\sigma} e^{-\frac{(x-m)^2}{2\sigma^2}}$ となるとき、

Xは、正規分布 $N(m, \sigma^2)$ に従うという



$$f(x) = \frac{1}{\sqrt{2\pi} \sigma} e^{-\frac{(x-m)^2}{2\sigma^2}}$$

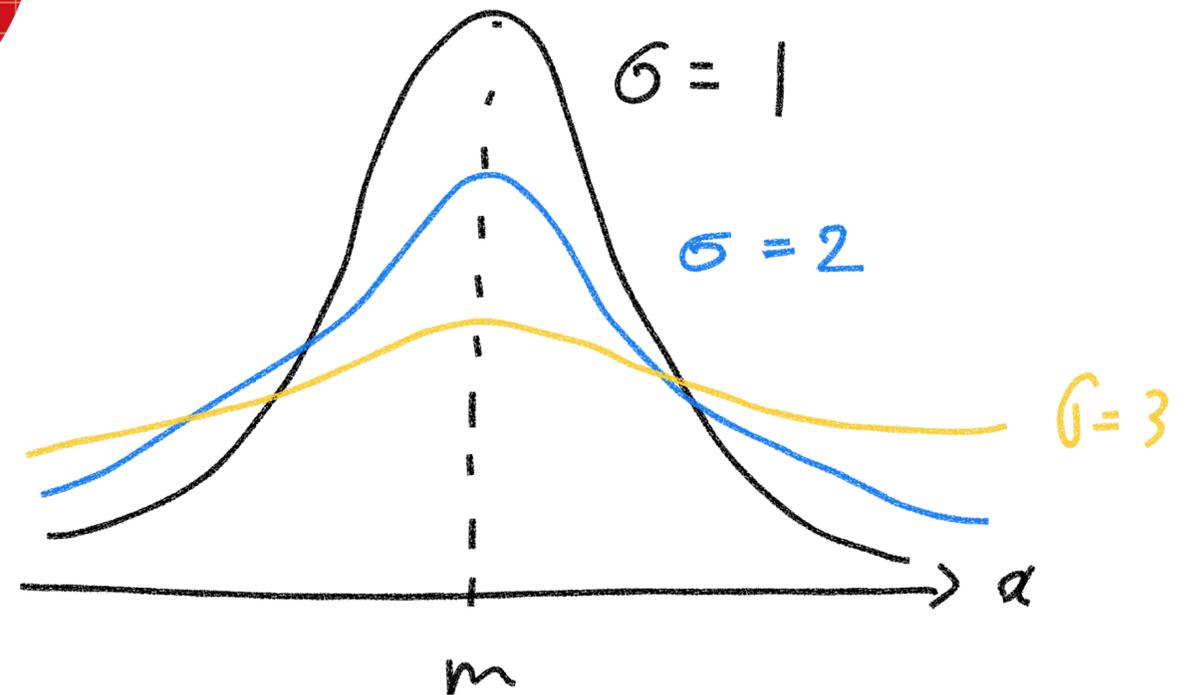
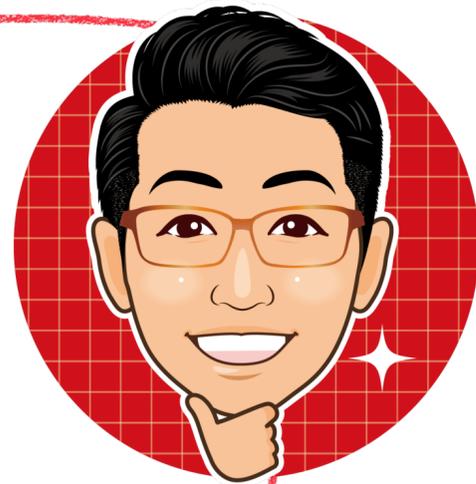


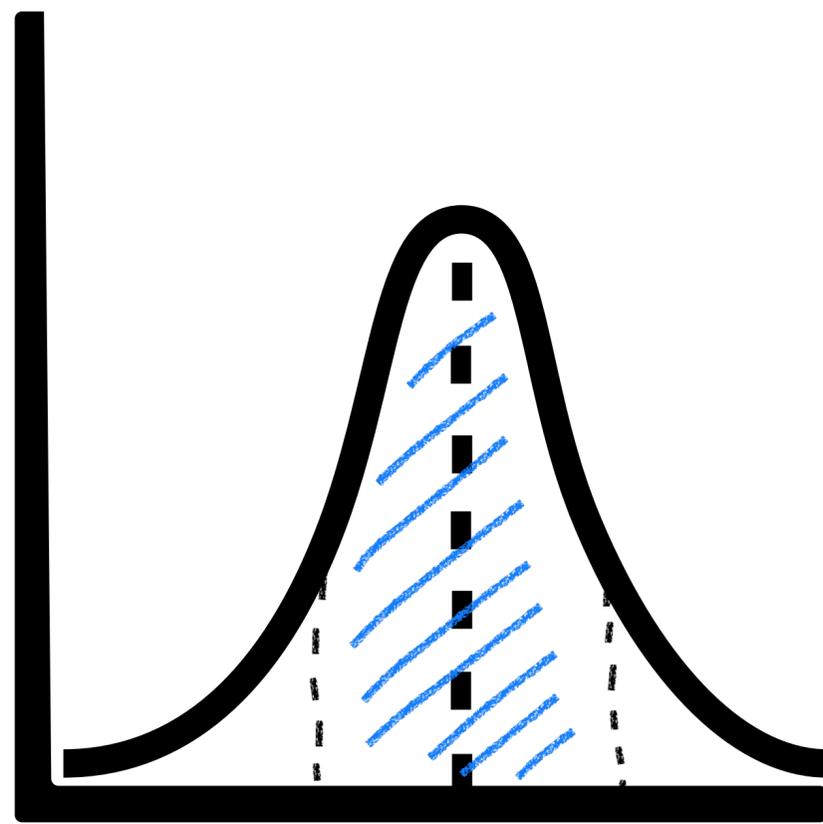
<まとめ>

$N(m, \sigma^2)$ に従うとき.

$$E(x) = m, \quad \sigma(x) = \sigma$$

- ① $f(x)$ は、 $x=m$ に $\frac{1}{\sqrt{2\pi} \sigma}$ だけあり
- ② $\int_{-\infty}^{\infty} f(x) dx = 1$
- ③ σ の値が大きいほど、山は低く、横に広がります

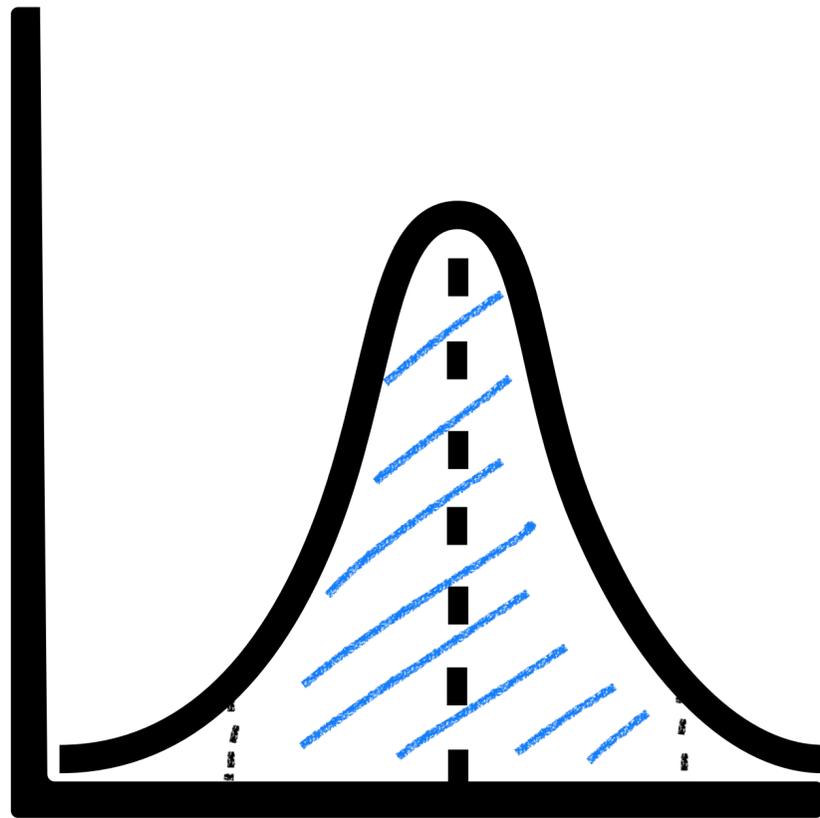




$m - \sigma$ m $m + \sigma$

$$P(m - \sigma \leq x \leq m + \sigma)$$

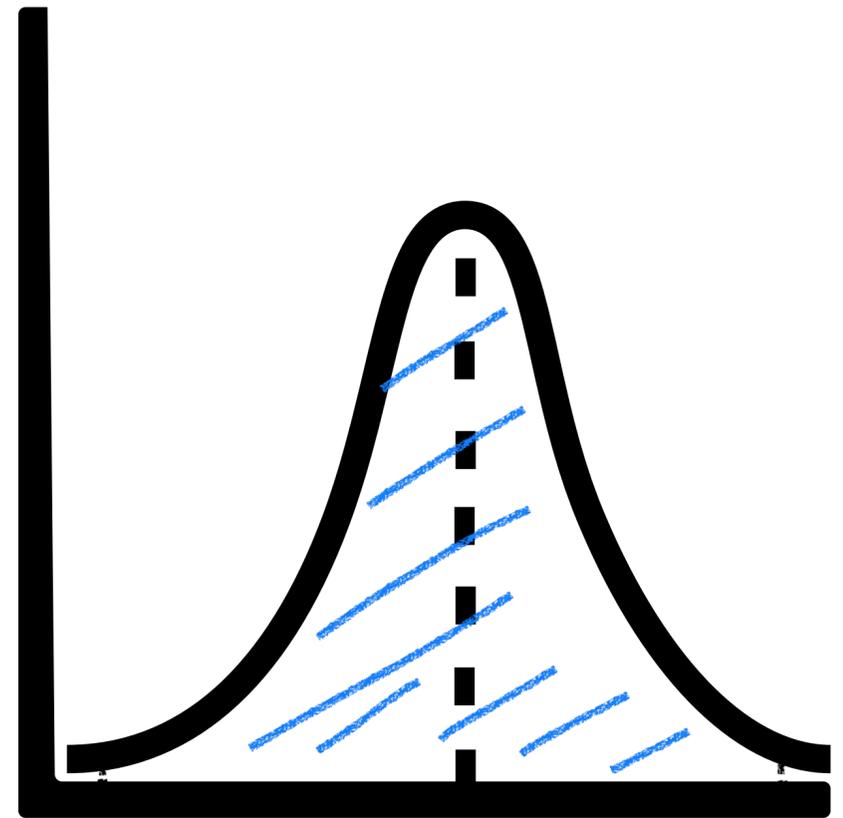
$$\approx 0.683$$



$m - 2\sigma$ m $m + 2\sigma$

$$P(m - 2\sigma \leq x \leq m + 2\sigma)$$

$$\approx 0.954$$



$m - 3\sigma$ m $m + 3\sigma$

$$P(m - 3\sigma \leq x \leq m + 3\sigma)$$

$$\approx 0.997$$



