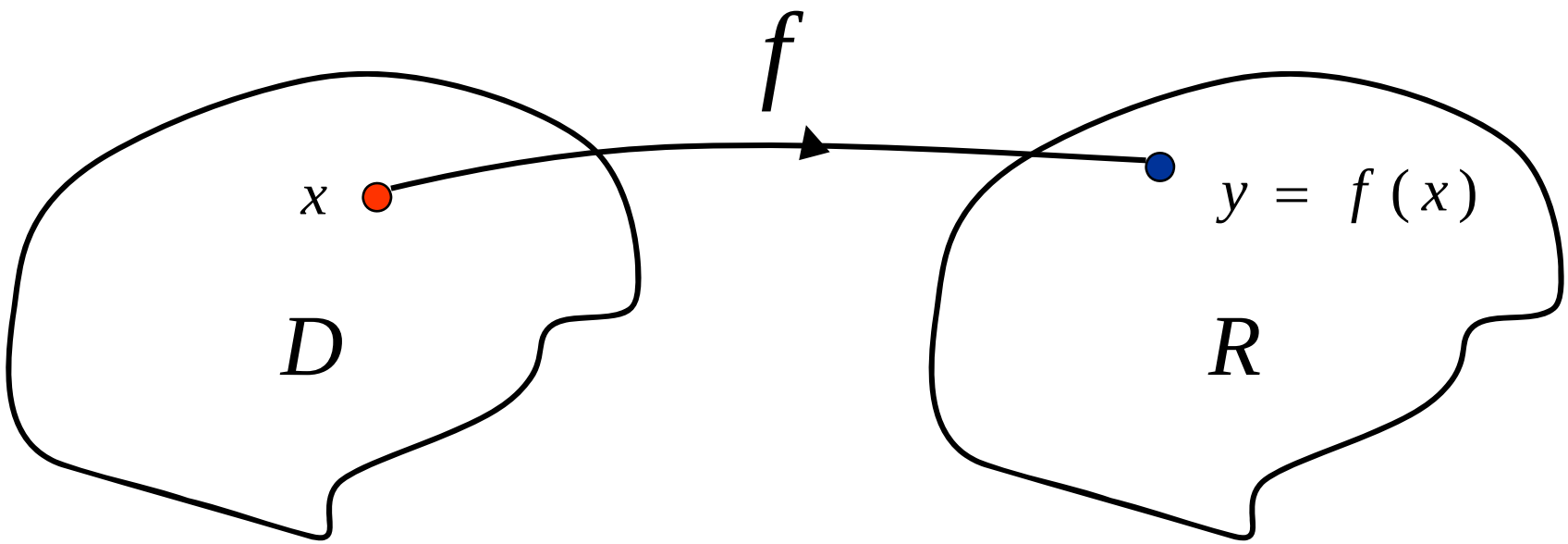

Figure 3.1

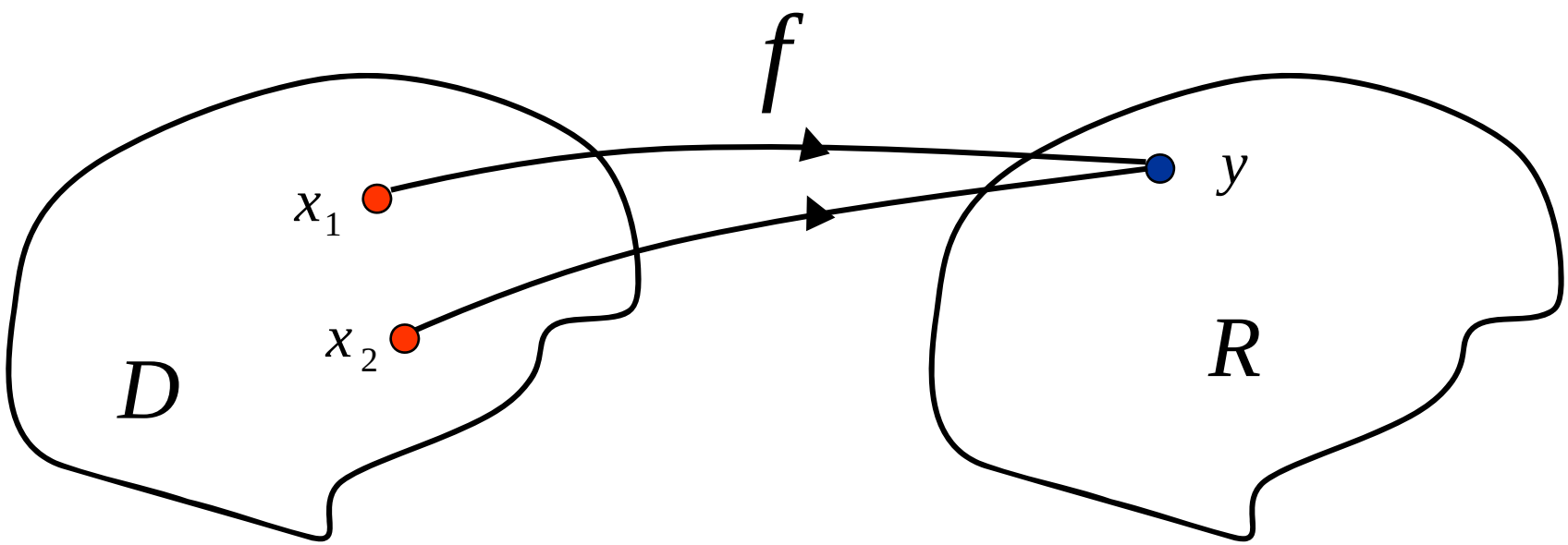

Figure 3.2

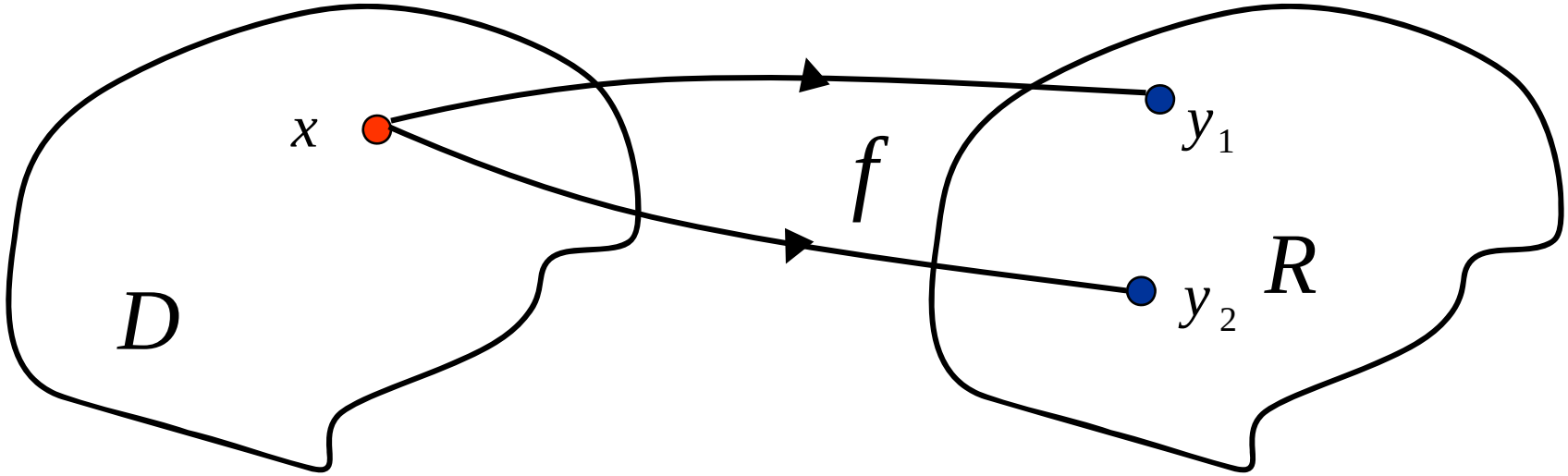

Figure 3.3

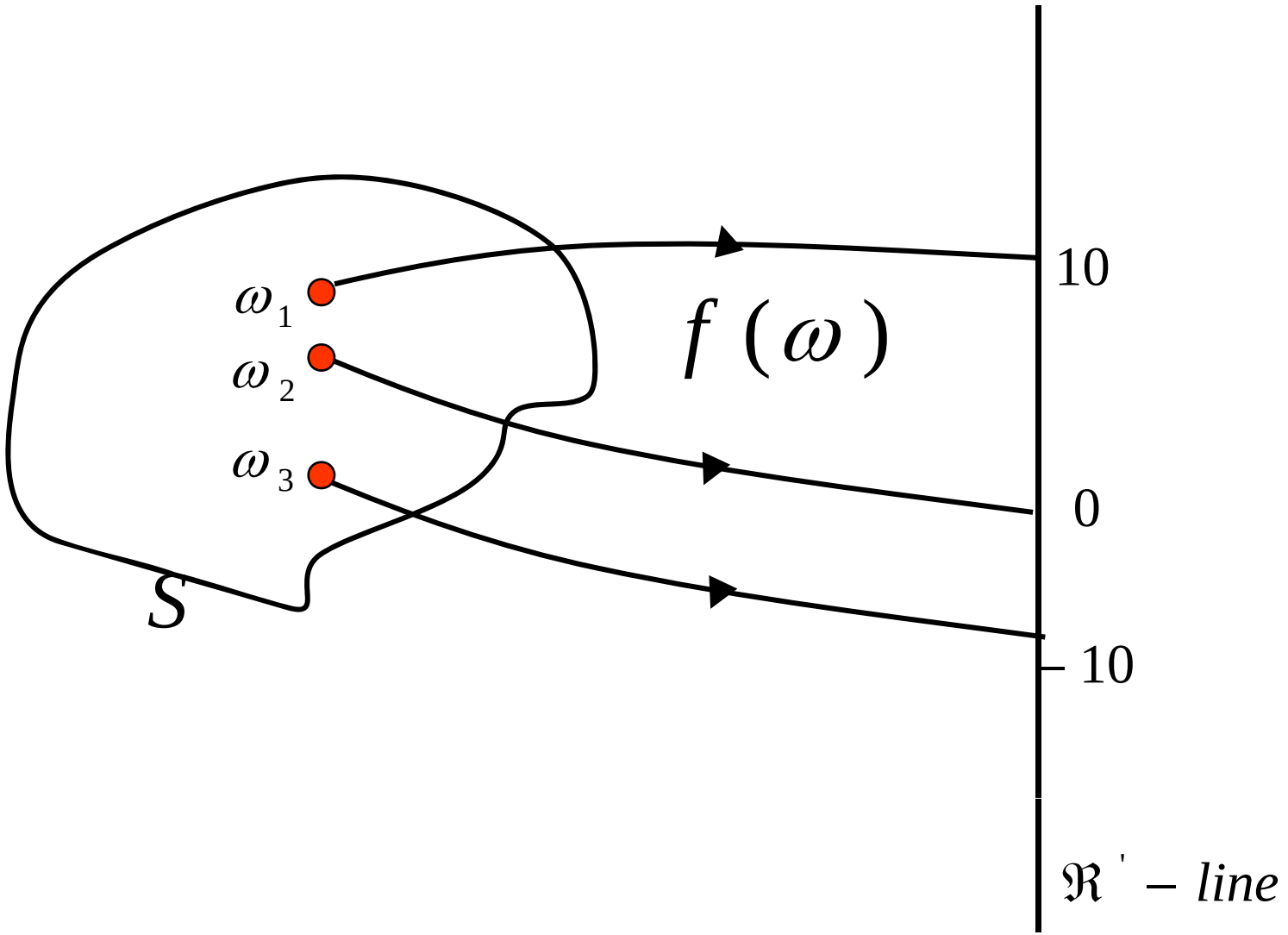

Figure 3.4

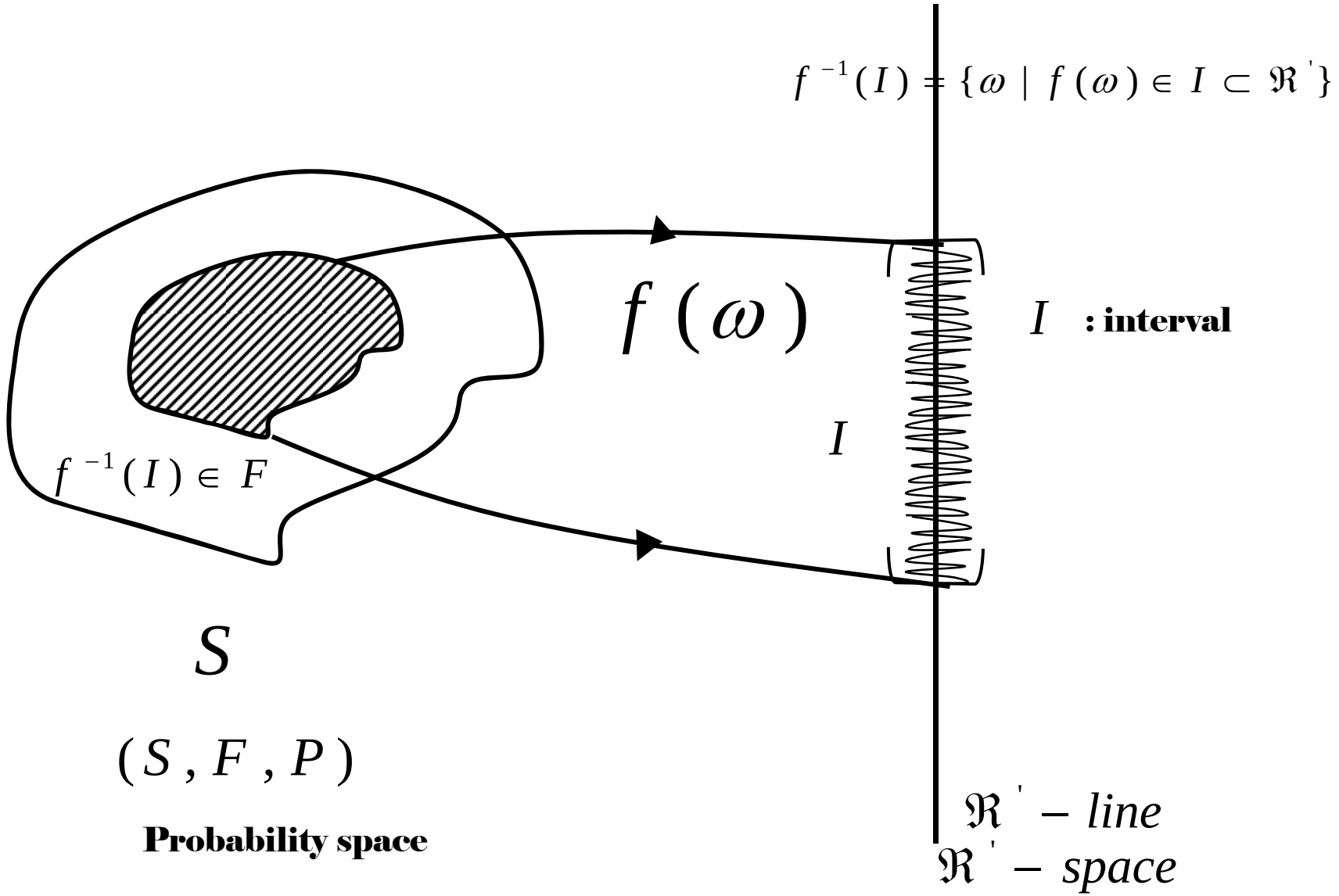
$f^{-1}(I) = \{\omega \mid f(\omega) \in I \subset \Re'\}$
$f(\omega)$
I : interval
I
$f^{-1}(I) \in F$
S
(S, F, P)
Probability space
$\Re'$ – line
$\Re'$ – space

Figure 3.5

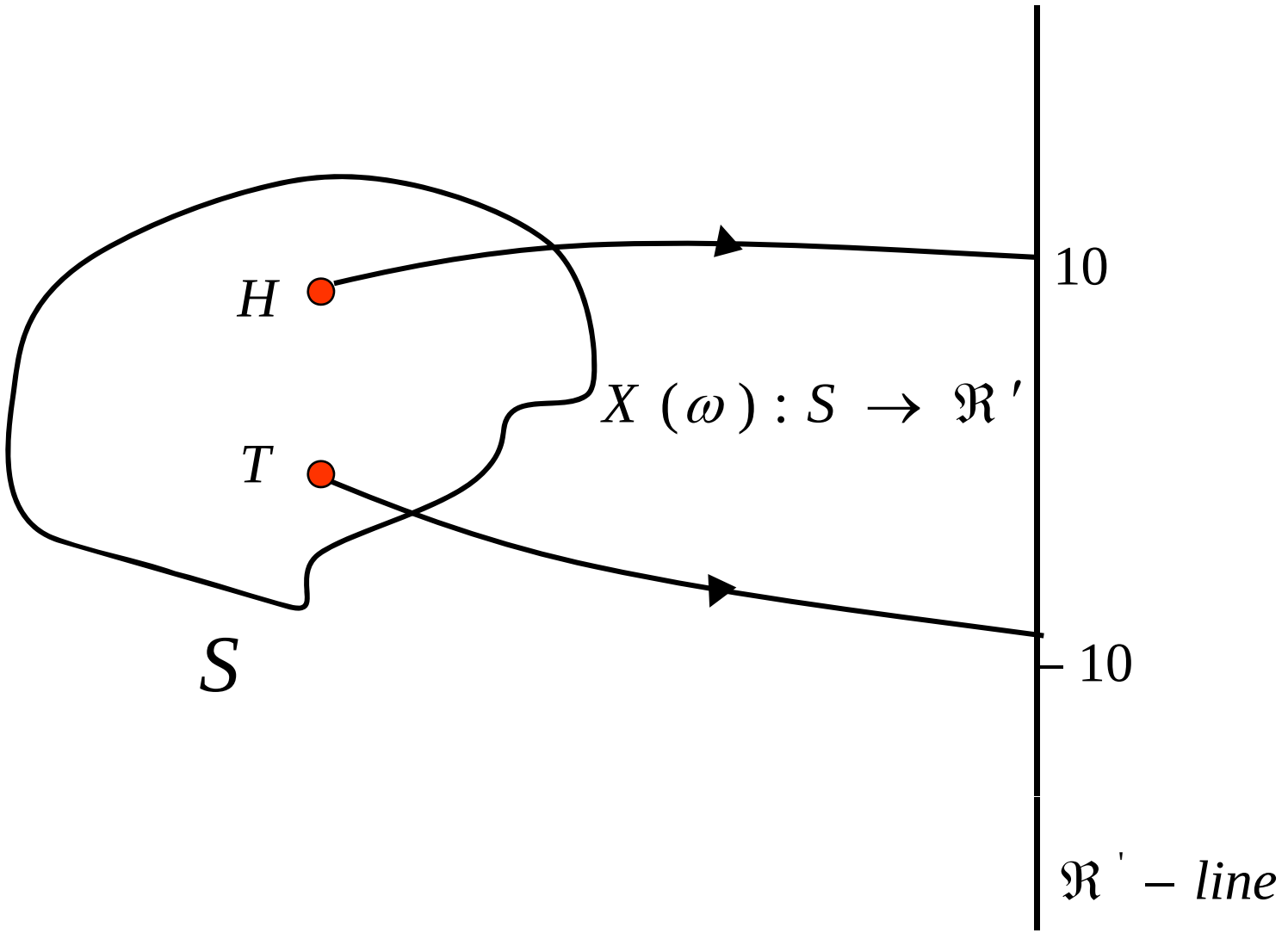

Figure 3.6

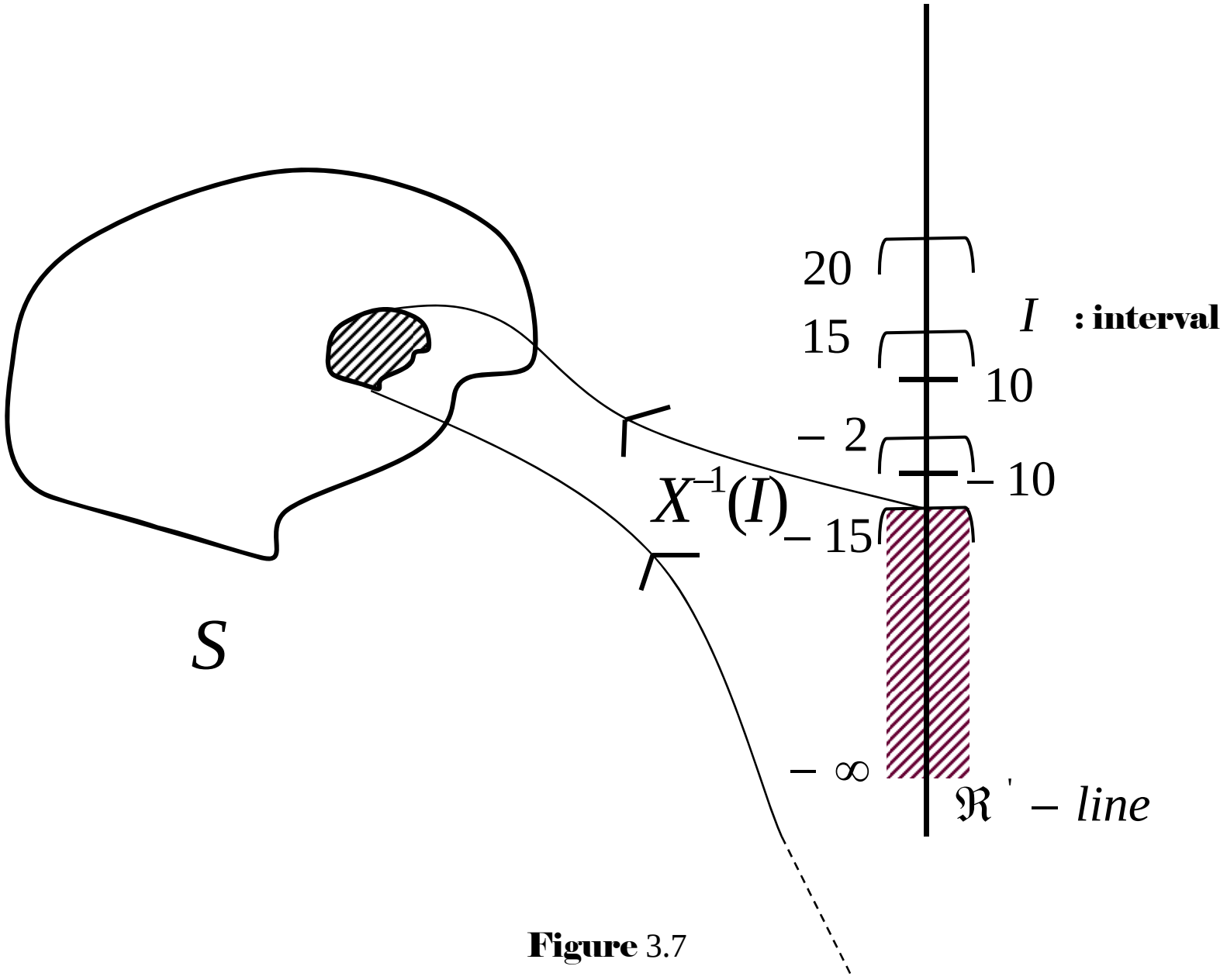

Figure 3.7

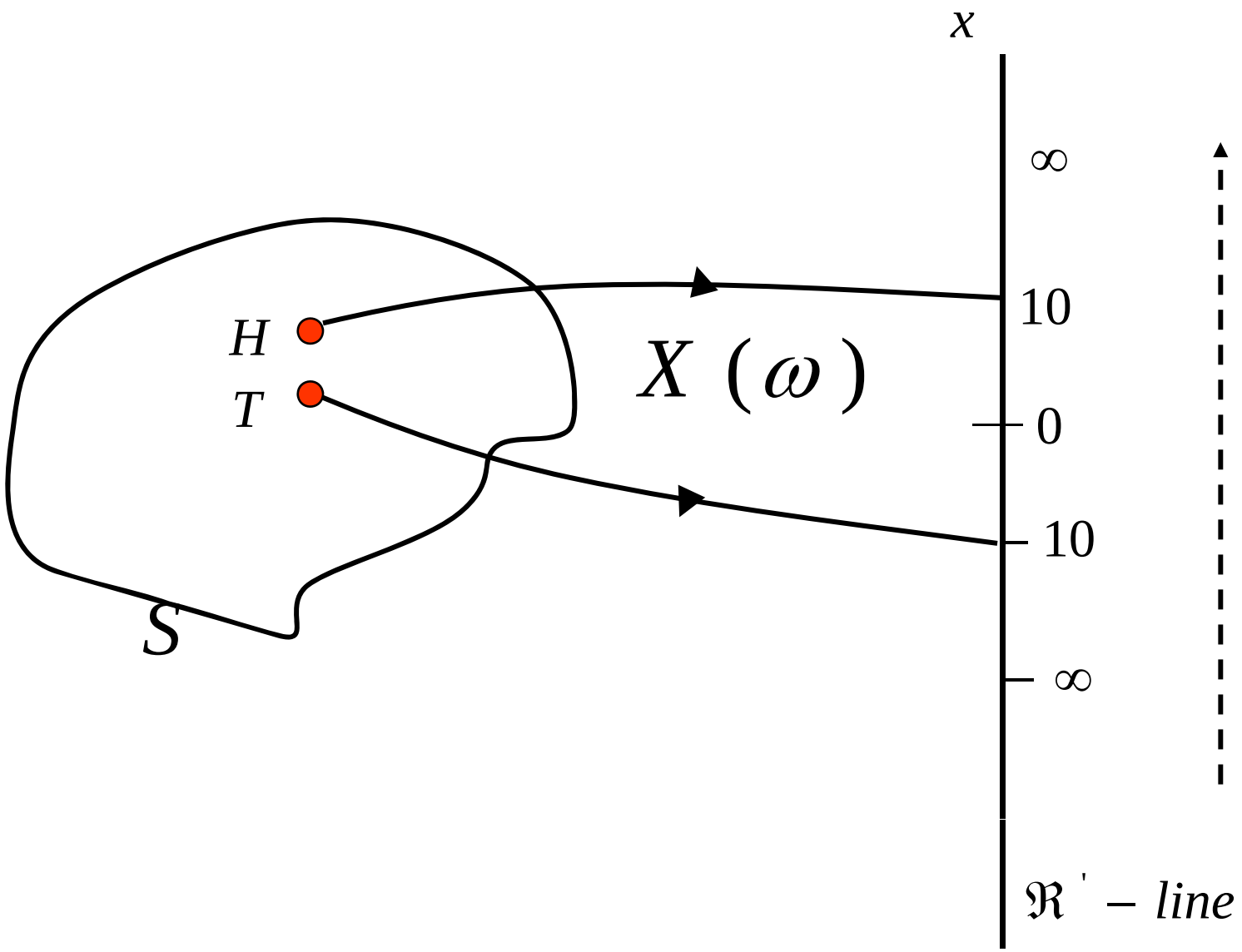

Figure 3.8

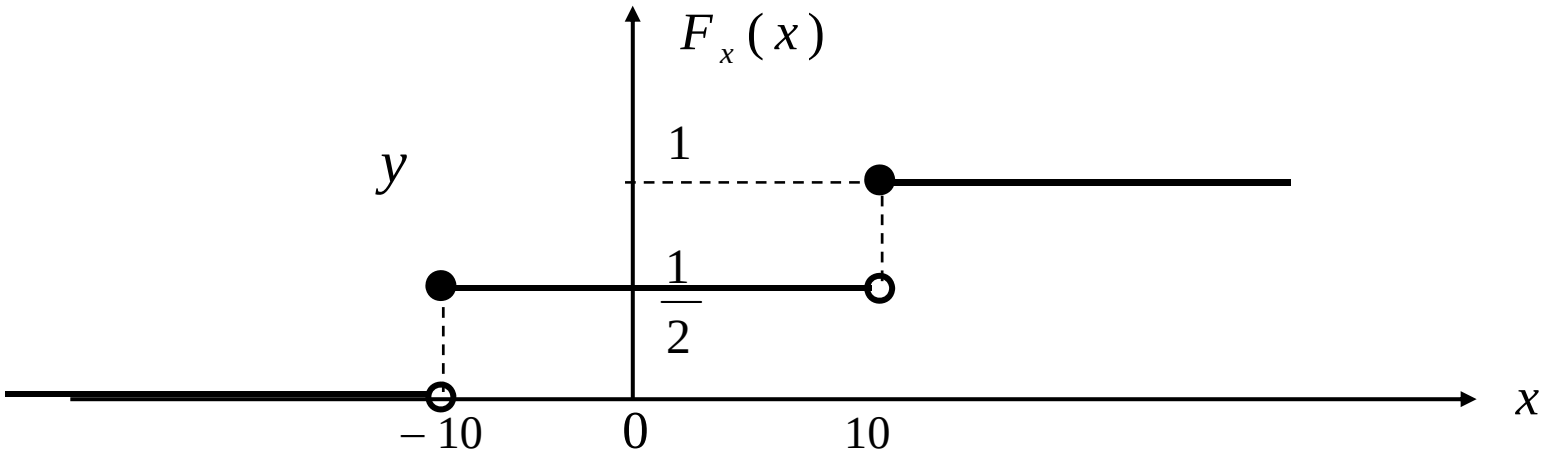

Figure 3.9

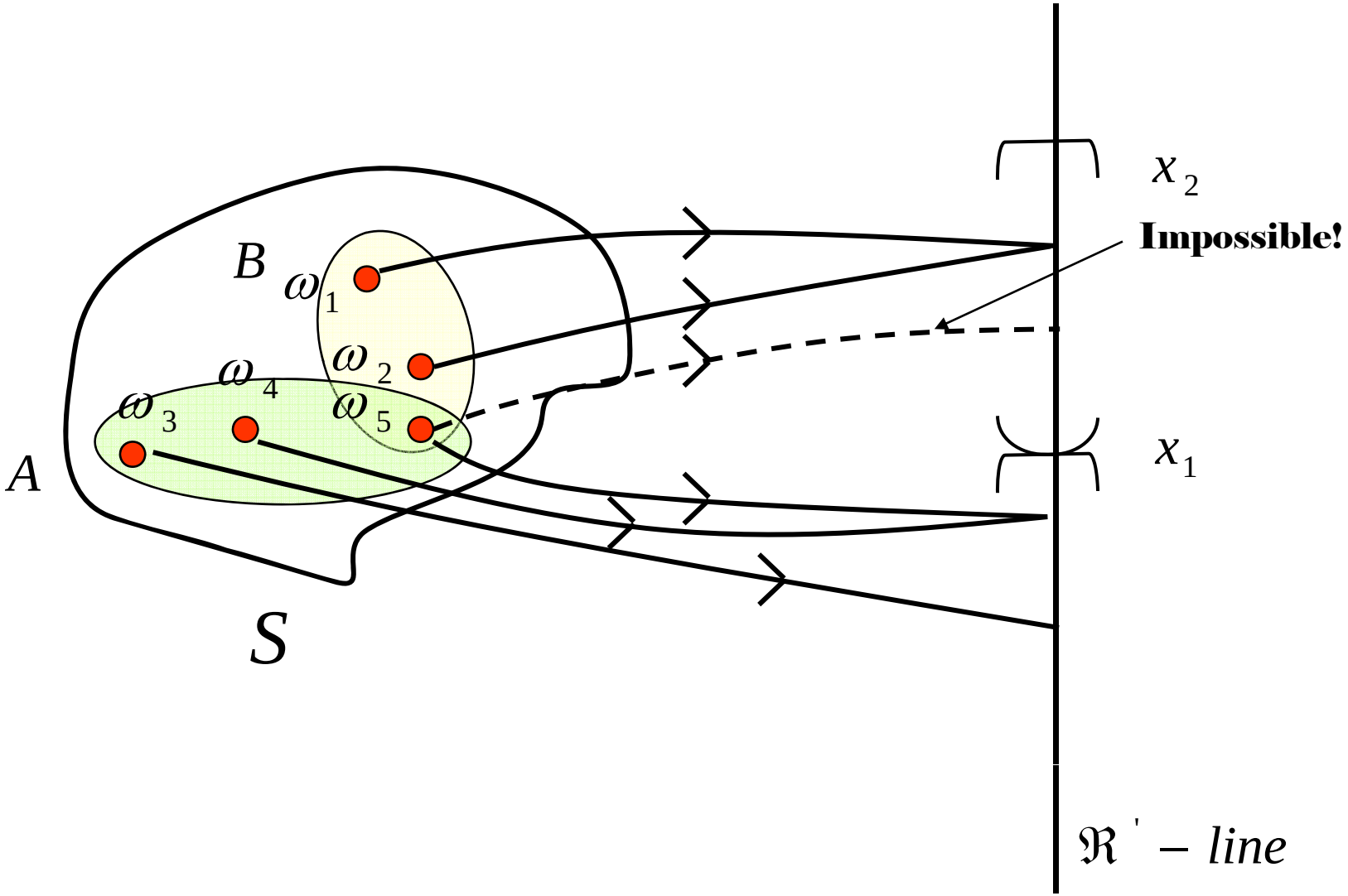
x_2
Impossible!
B
ω_1
ω_2
ω_4
ω_3
ω_5
A
x_1
S
$\Re' - line$

Figure 3.10

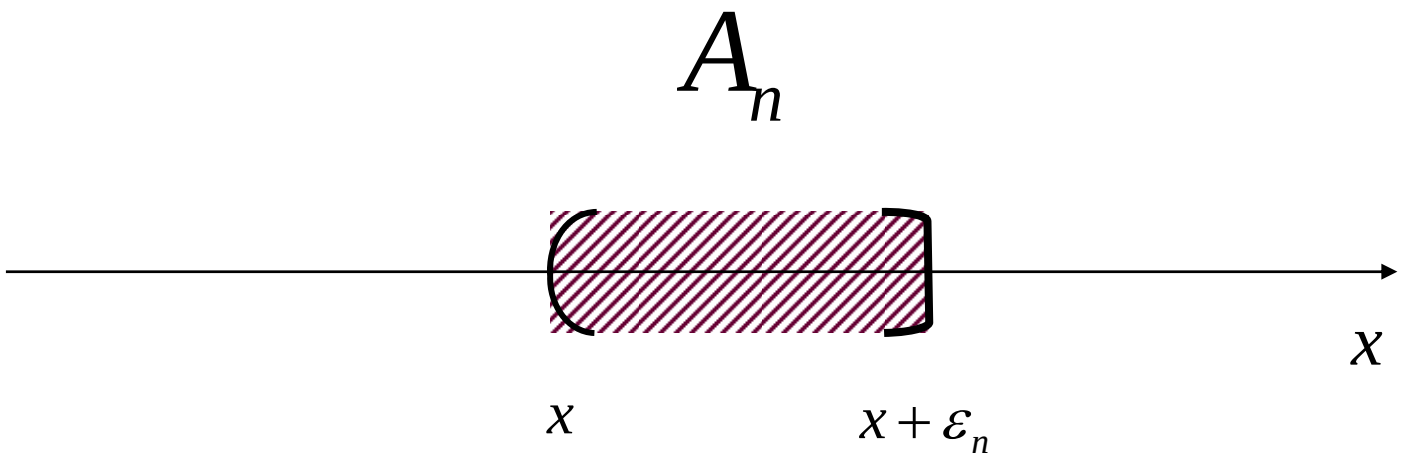

Figure 3.11

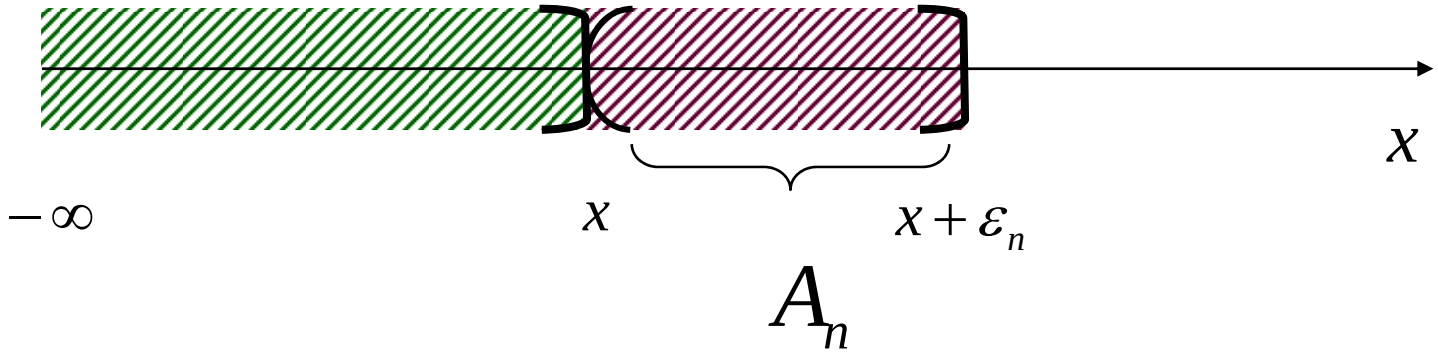

Figure 3.12

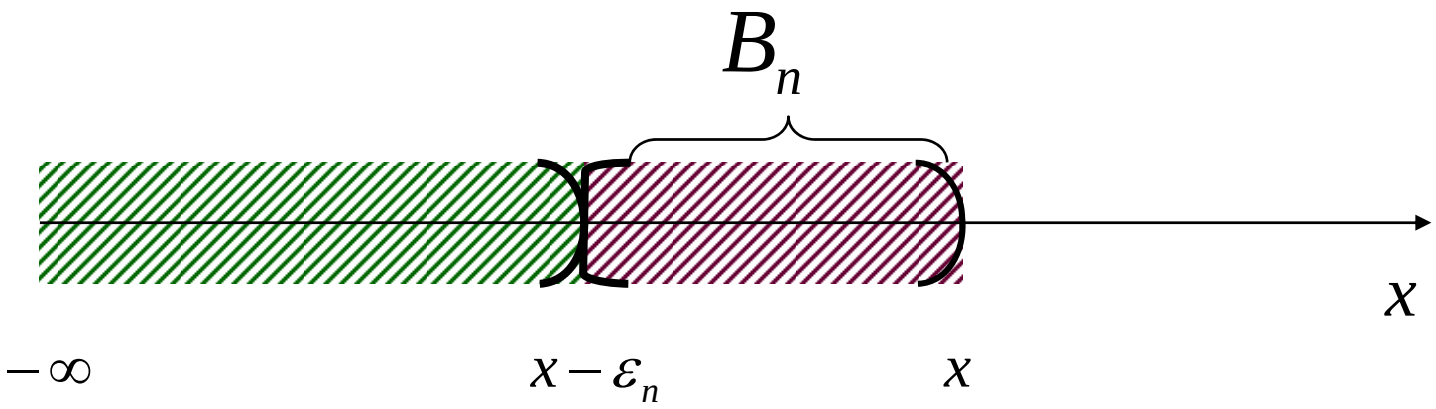

Figure 3.13

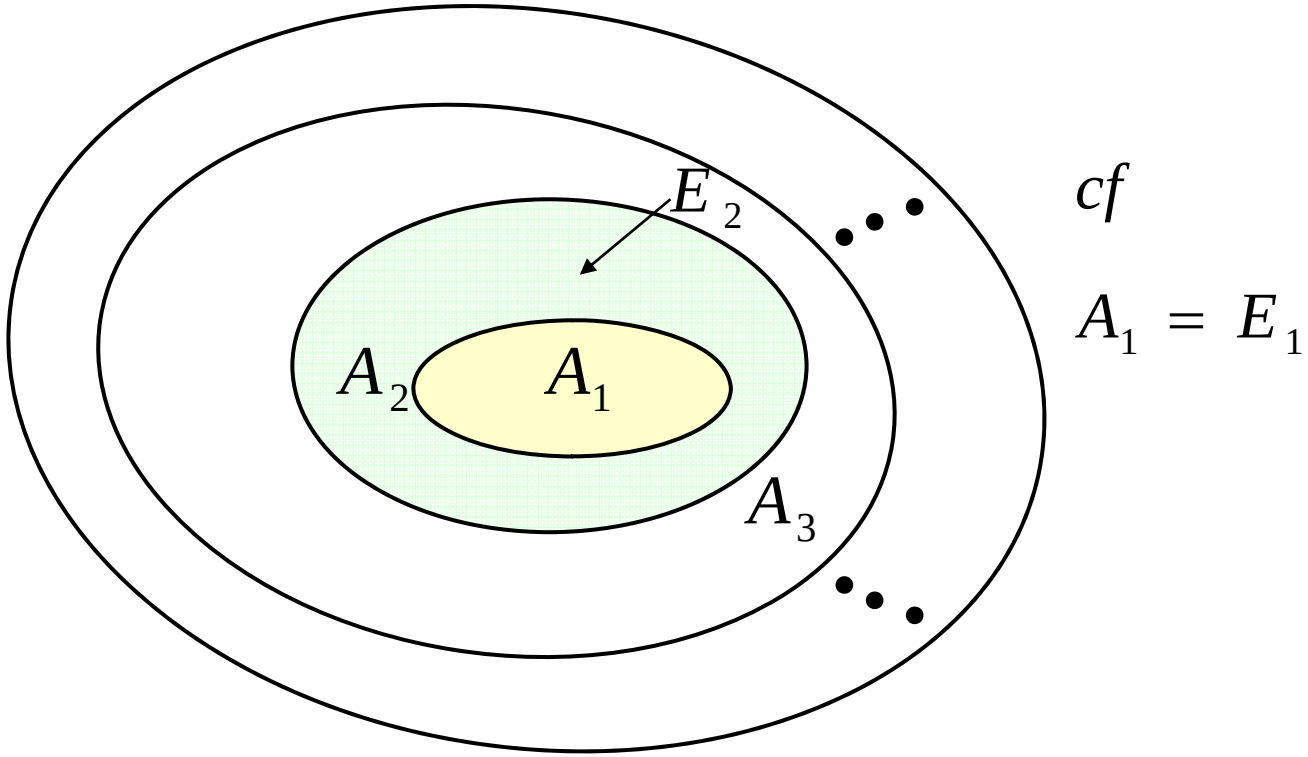

Figure 3.14

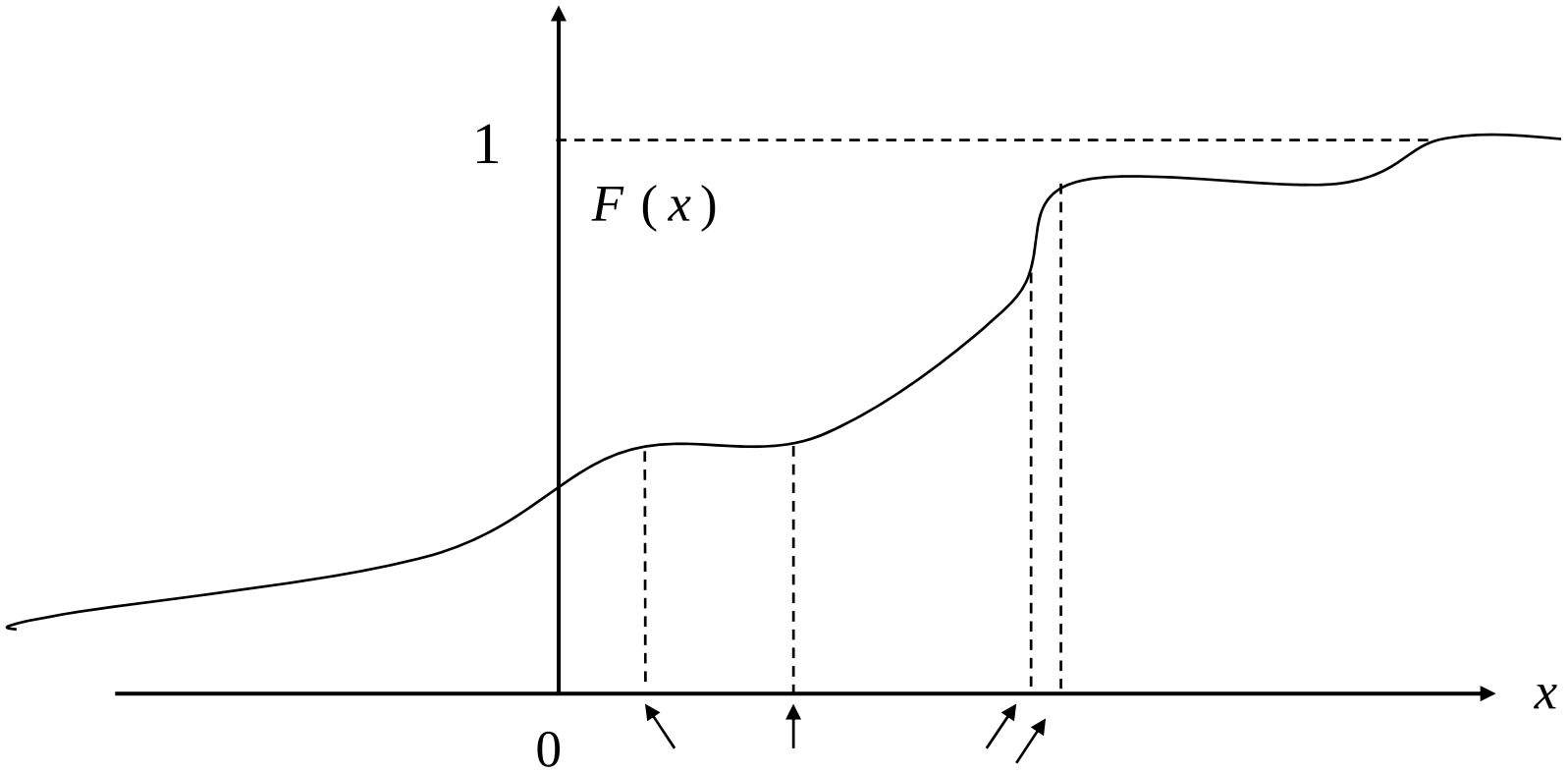
1
$F(x)$
0
x
Non-differentiable points
All possible values for $X(\omega)$,i.e.
$X(\omega) \in \Re'$

Figure 3.15

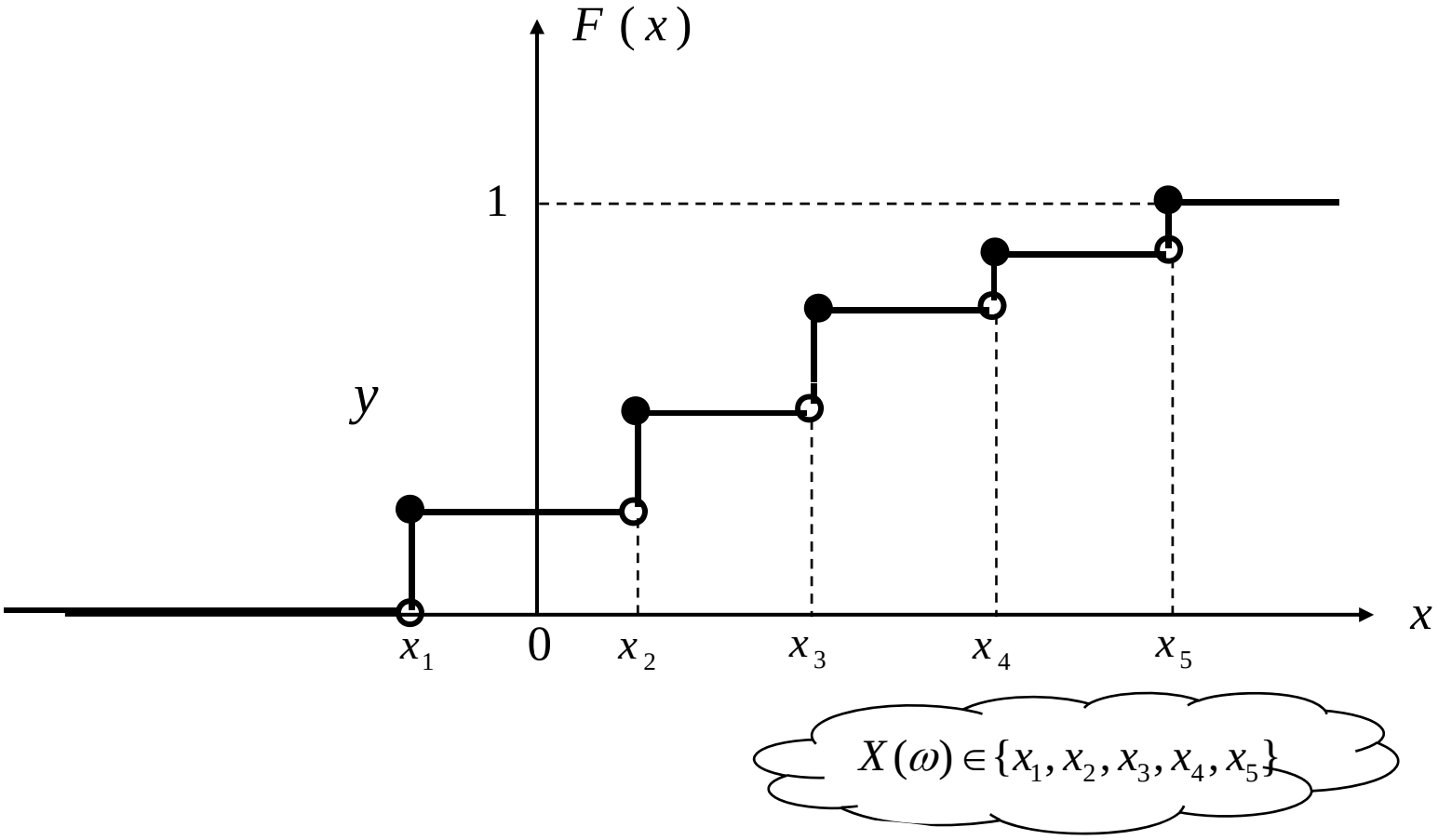

Figure 3.16

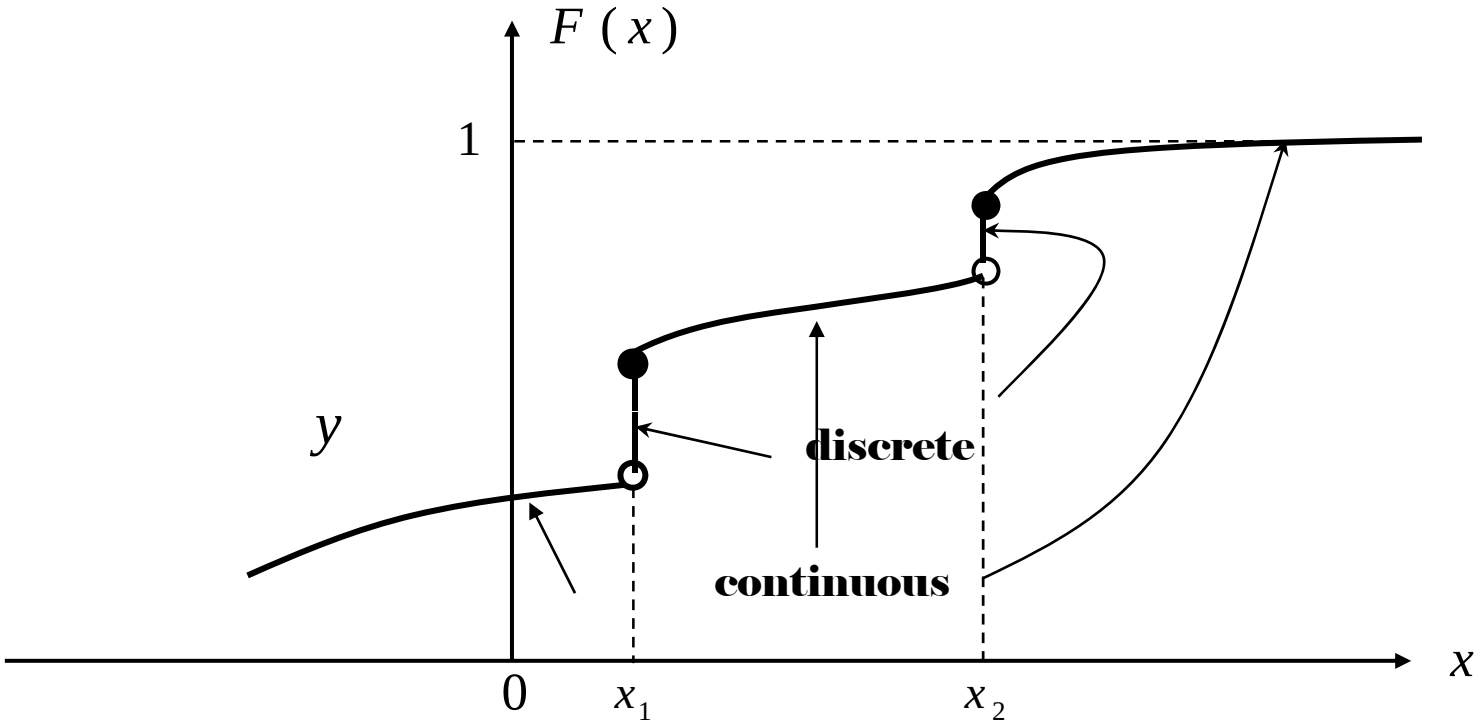

Figure 3.17

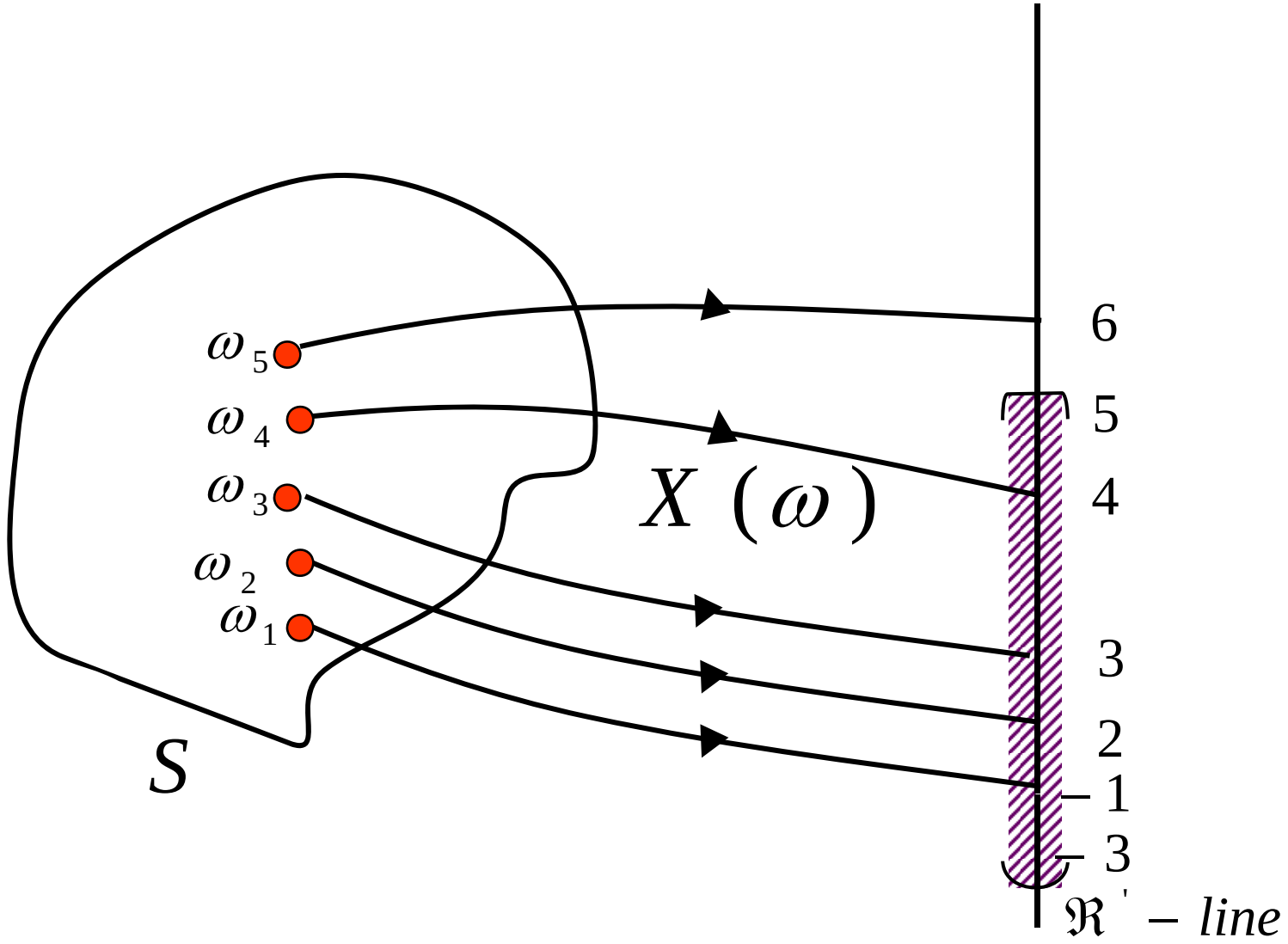
ω_5
ω_4
ω_3
ω_2
ω_1
$X(\omega)$
S
6
5
4
3
2
1
3
$\Re'$ – *line*

Figure 3.18

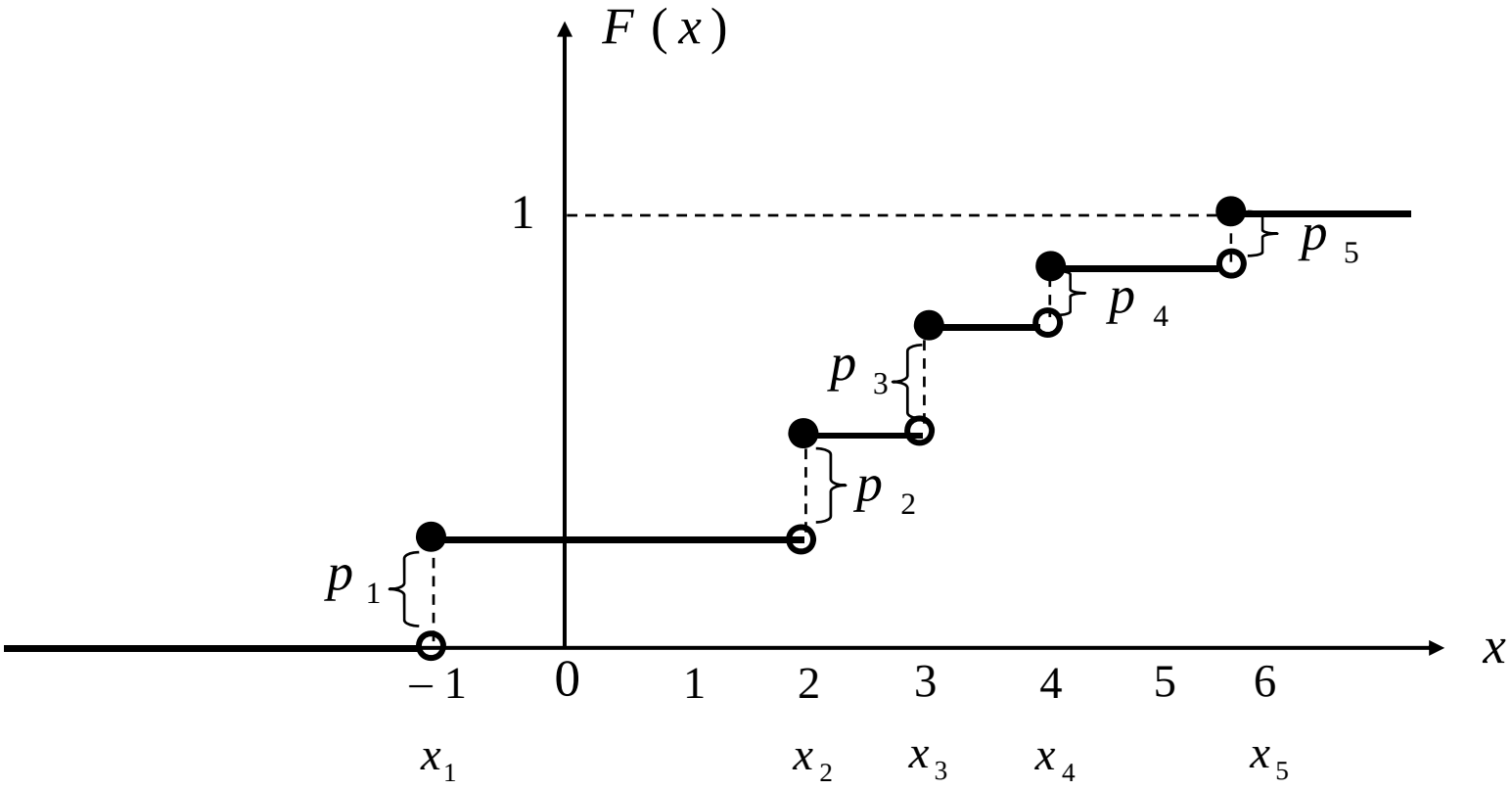

Figure 3.19

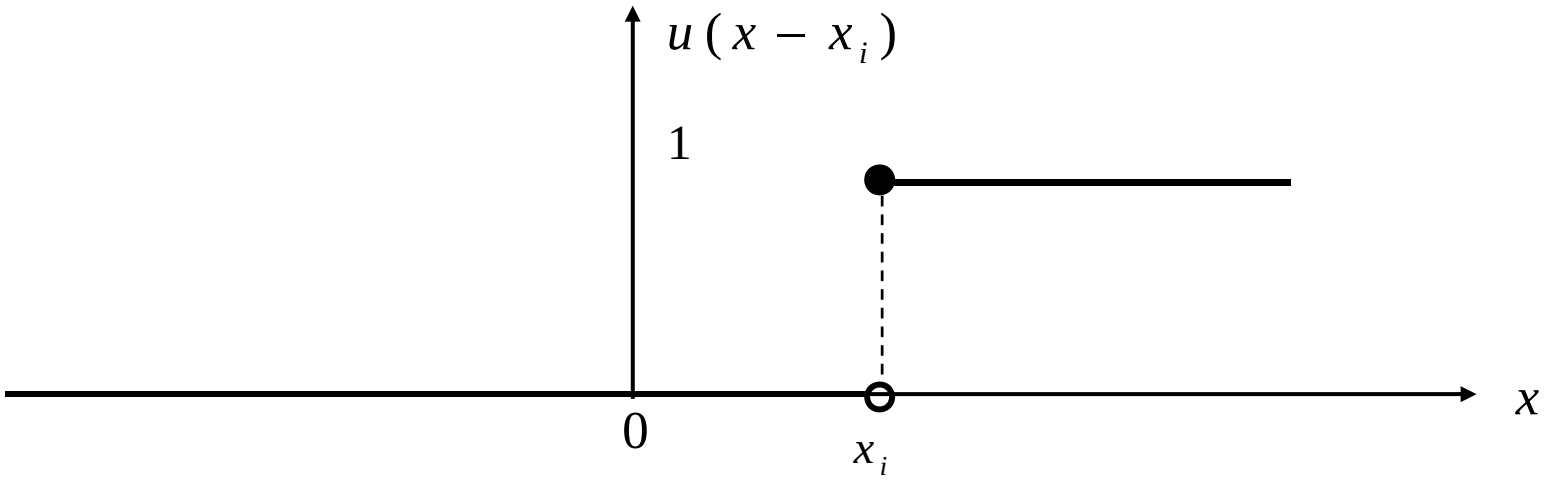

Figure 3.20

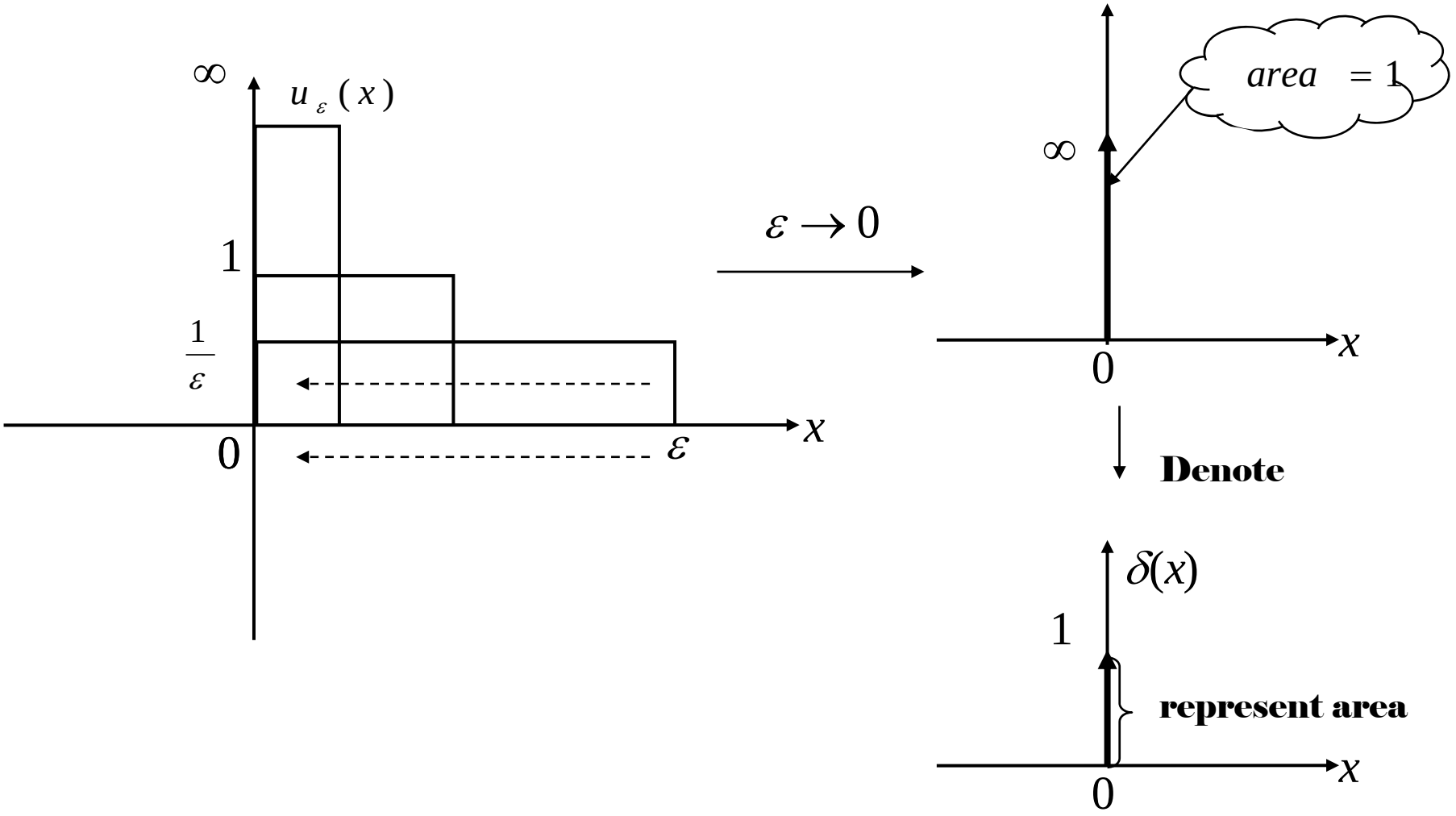
∞
$u_\varepsilon(x)$
1
$\frac{1}{\varepsilon}$
0
ε
x
$\varepsilon \to 0$
area = 1
∞
0
x
Denote
$\delta(x)$
1
represent area
0
x

Figure 3.21

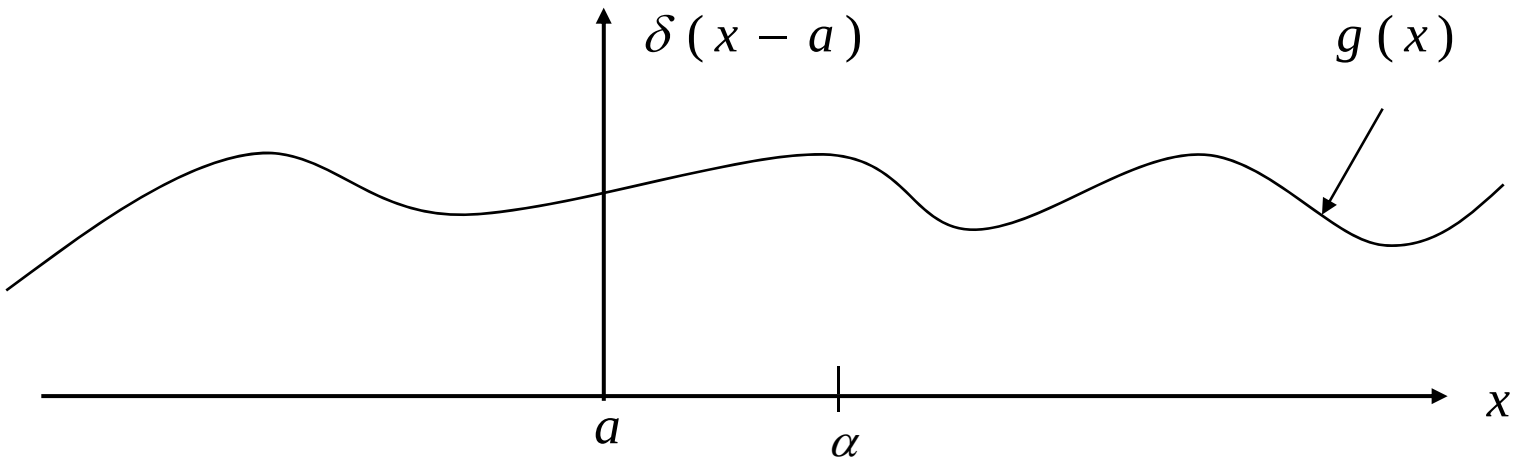

Figure 3.22

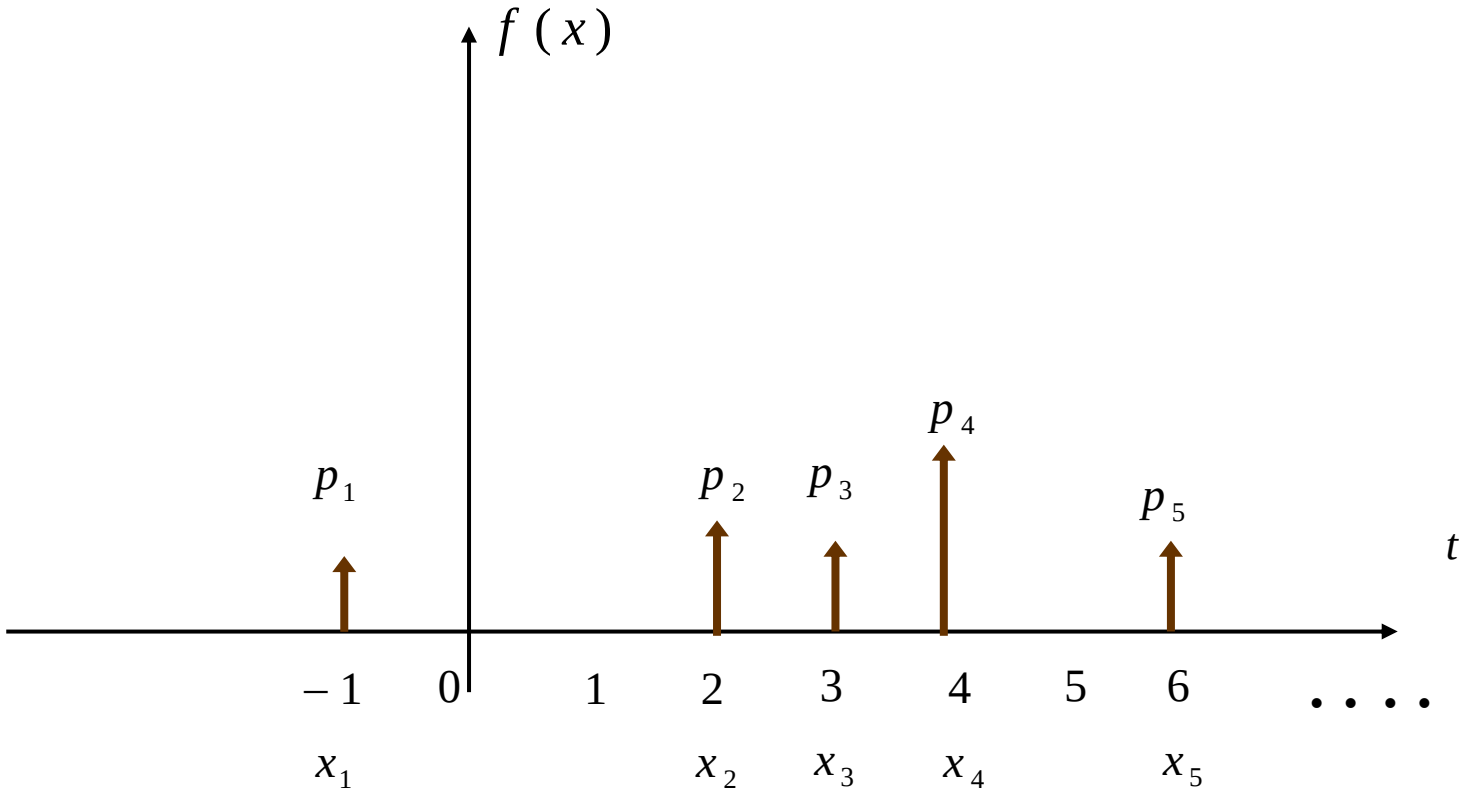

Figure 3.23

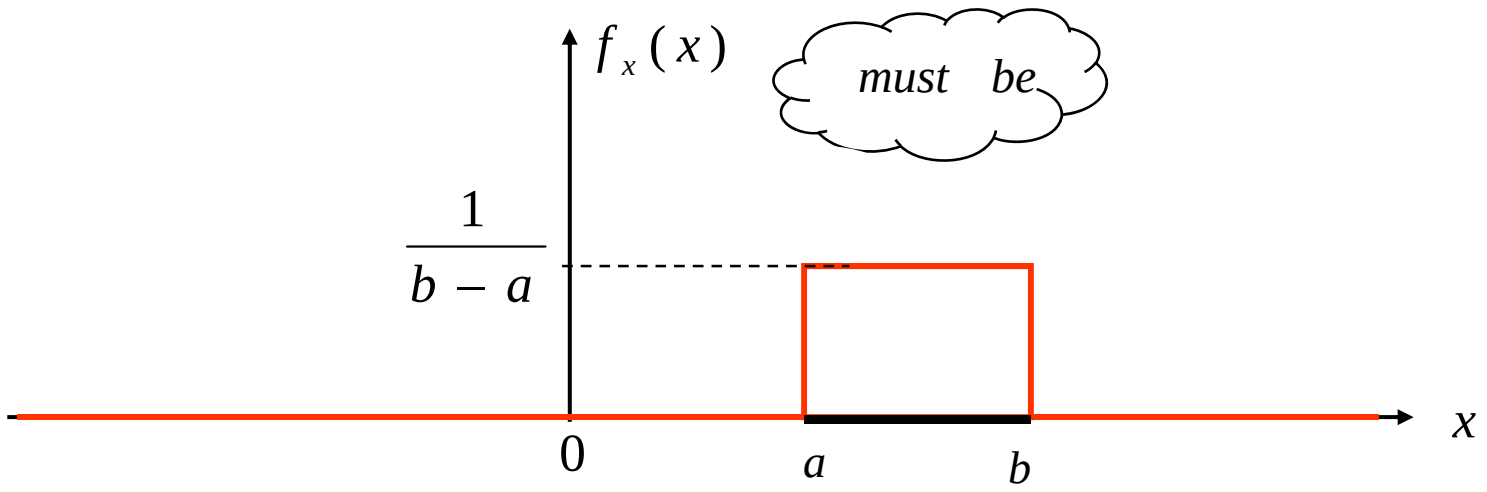

Figure 3.24

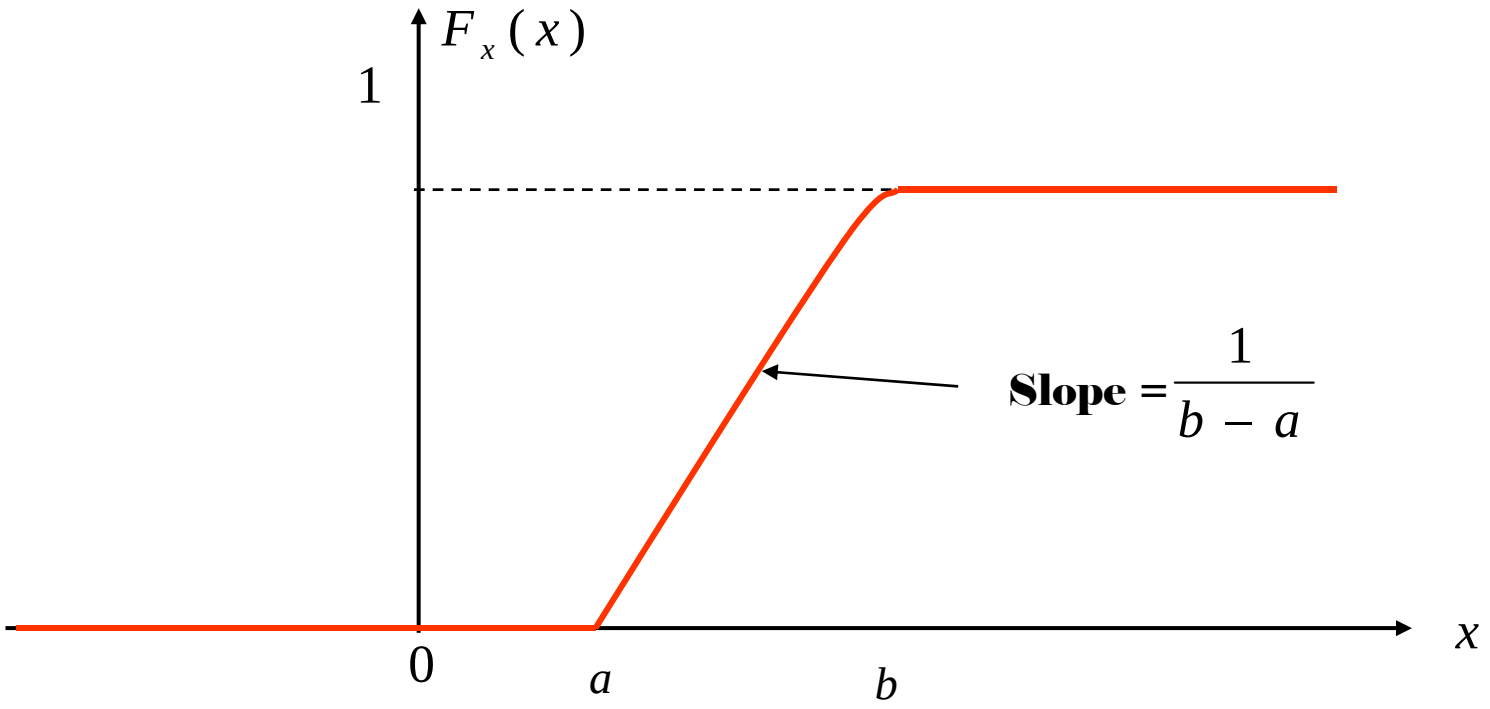

Figure 3.25

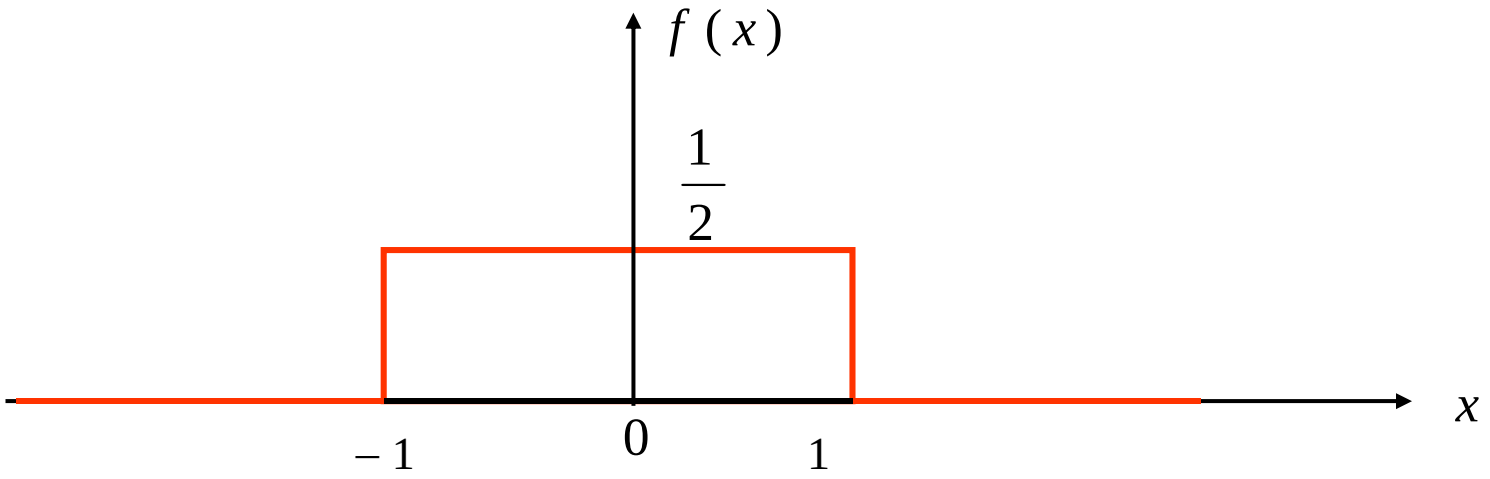

Figure 3.26

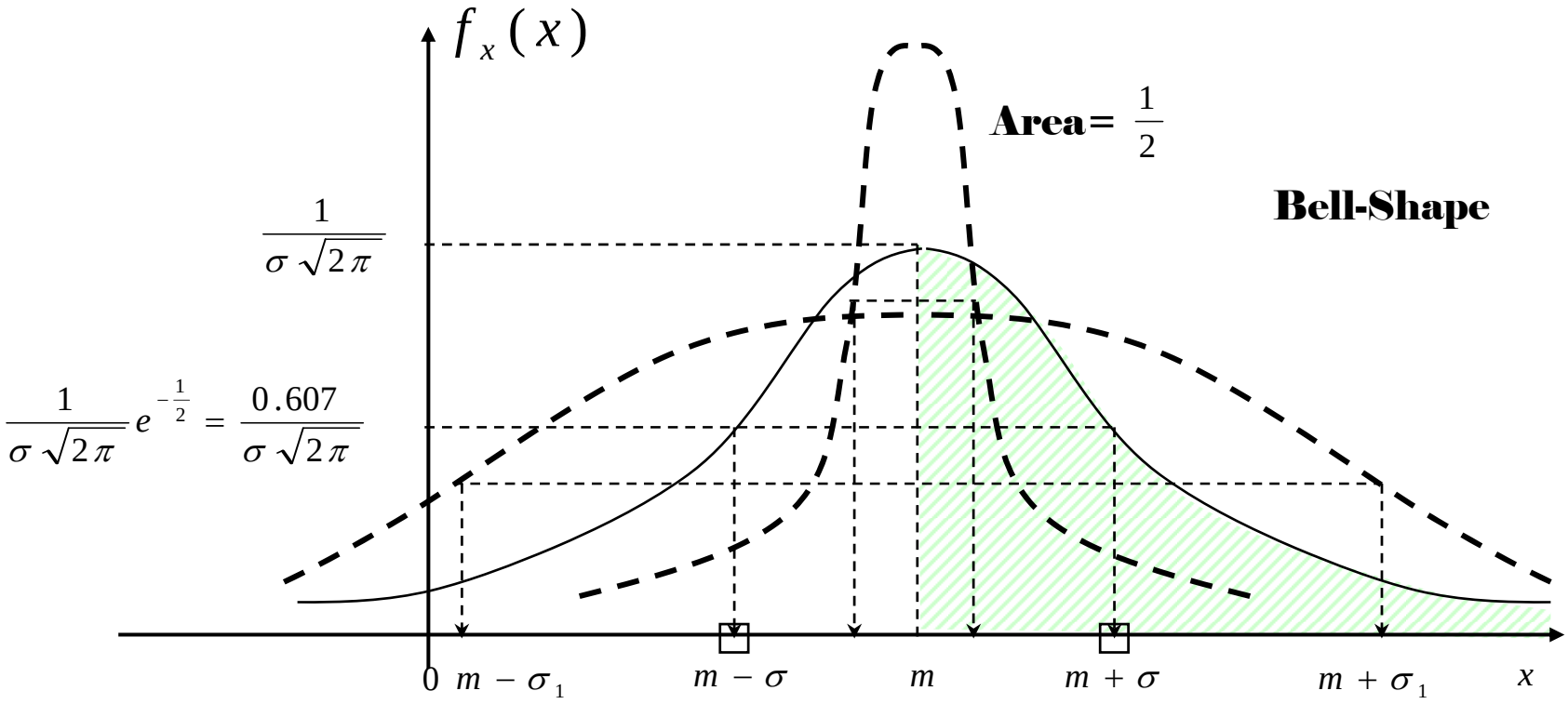
$f_x(x)$
Area = $\frac{1}{2}$
Bell-Shape
$\frac{1}{\sigma\sqrt{2\pi}}$
$\frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{1}{2}} = \frac{0.607}{\sigma\sqrt{2\pi}}$
0
$m - \sigma_1$
$m - \sigma$
m
$m + \sigma$
$m + \sigma_1$
x

Figure 3.27

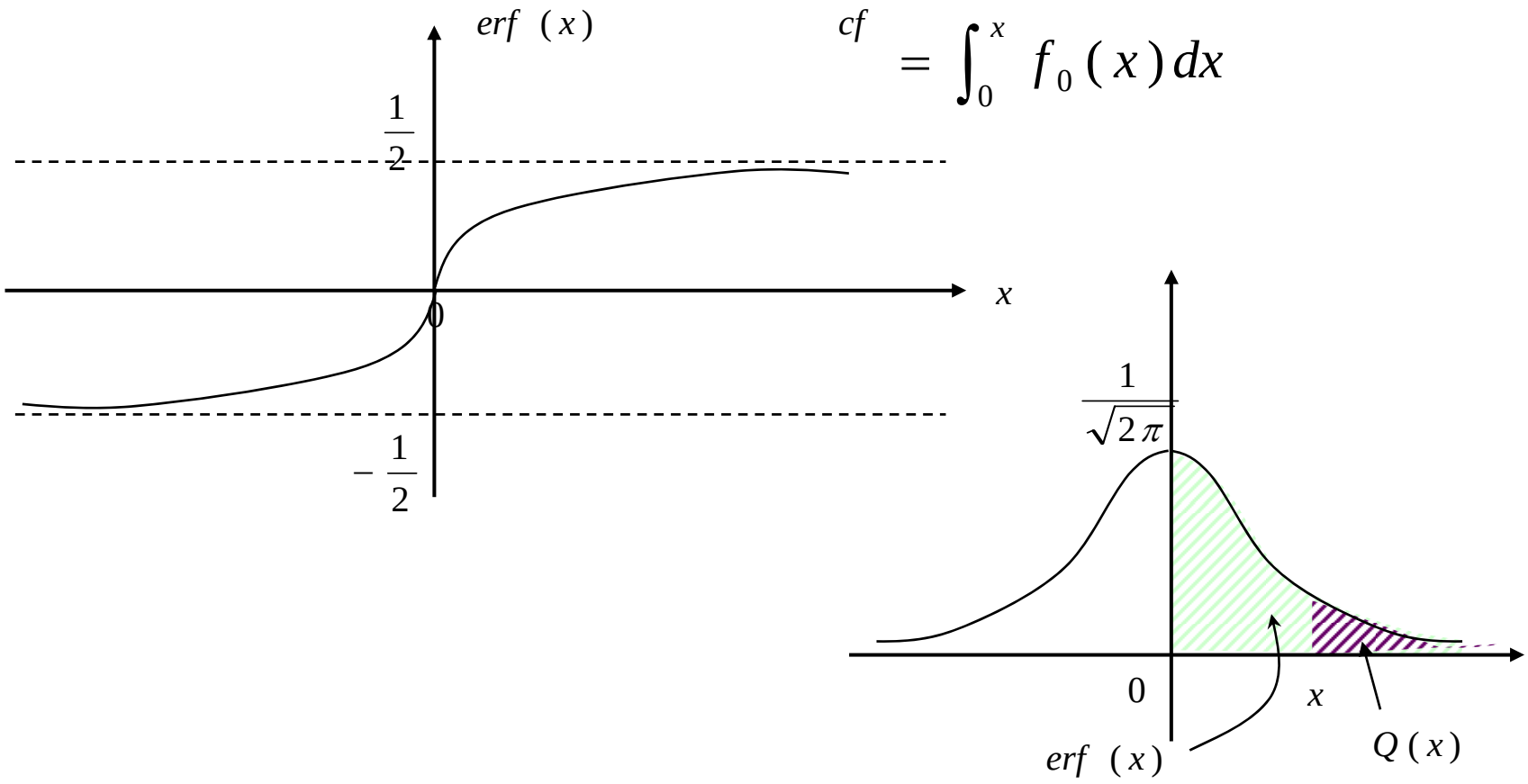

Figure 3.28

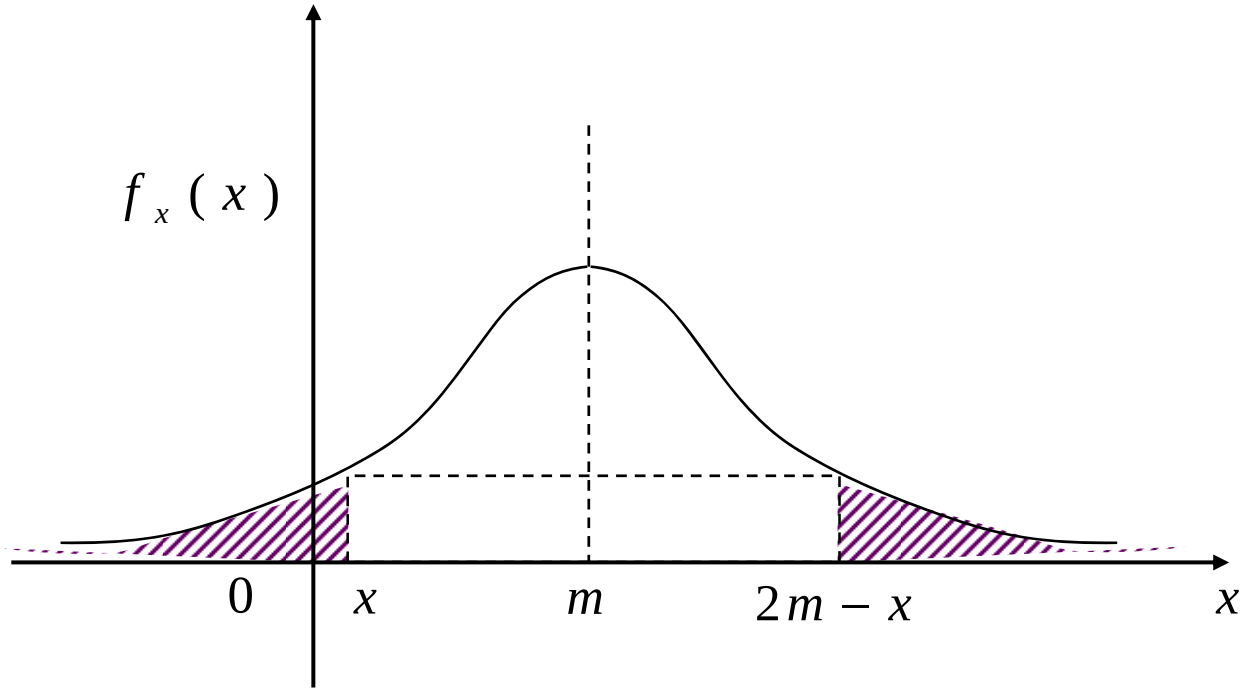

Figure 3.29

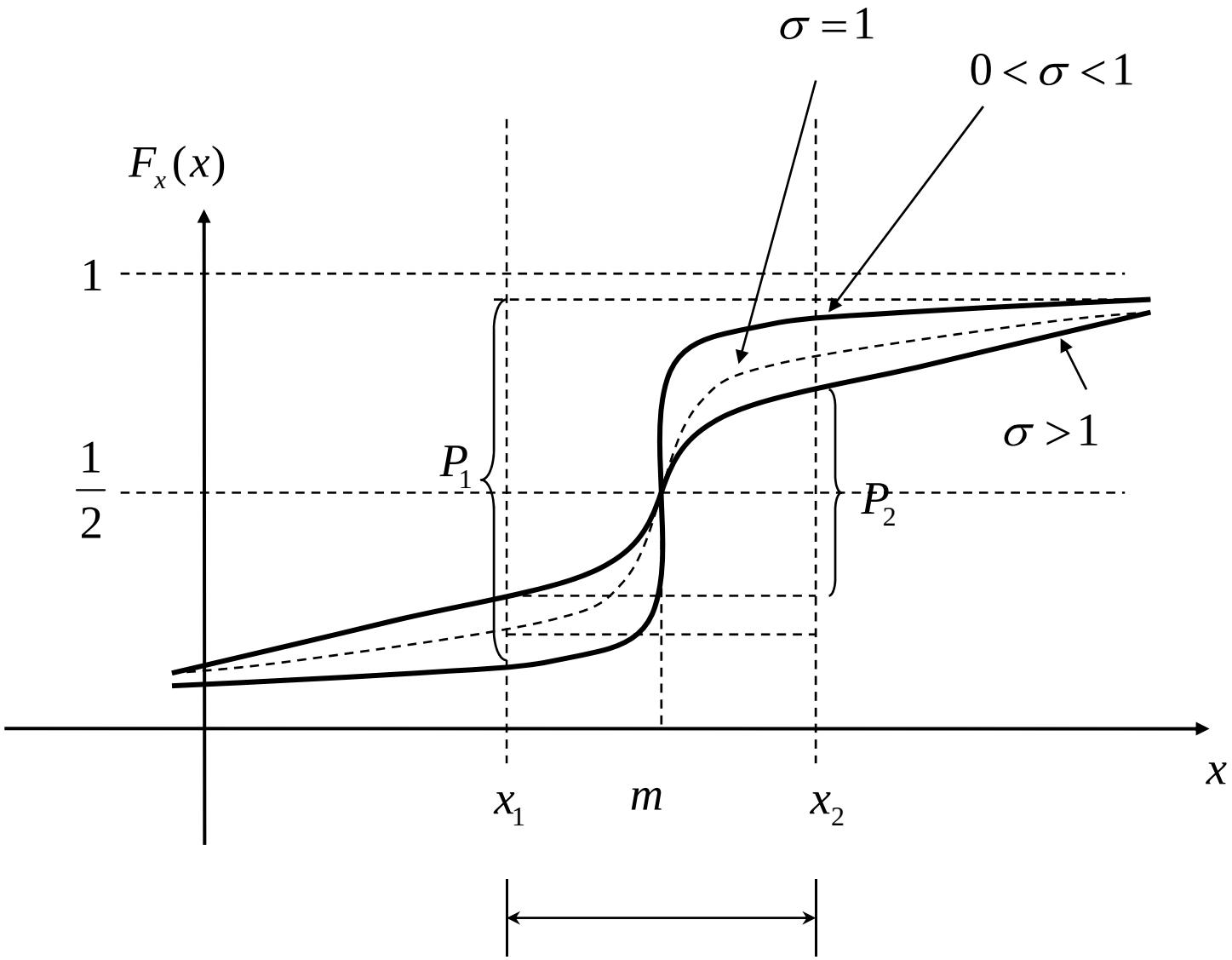

Figure 3.30

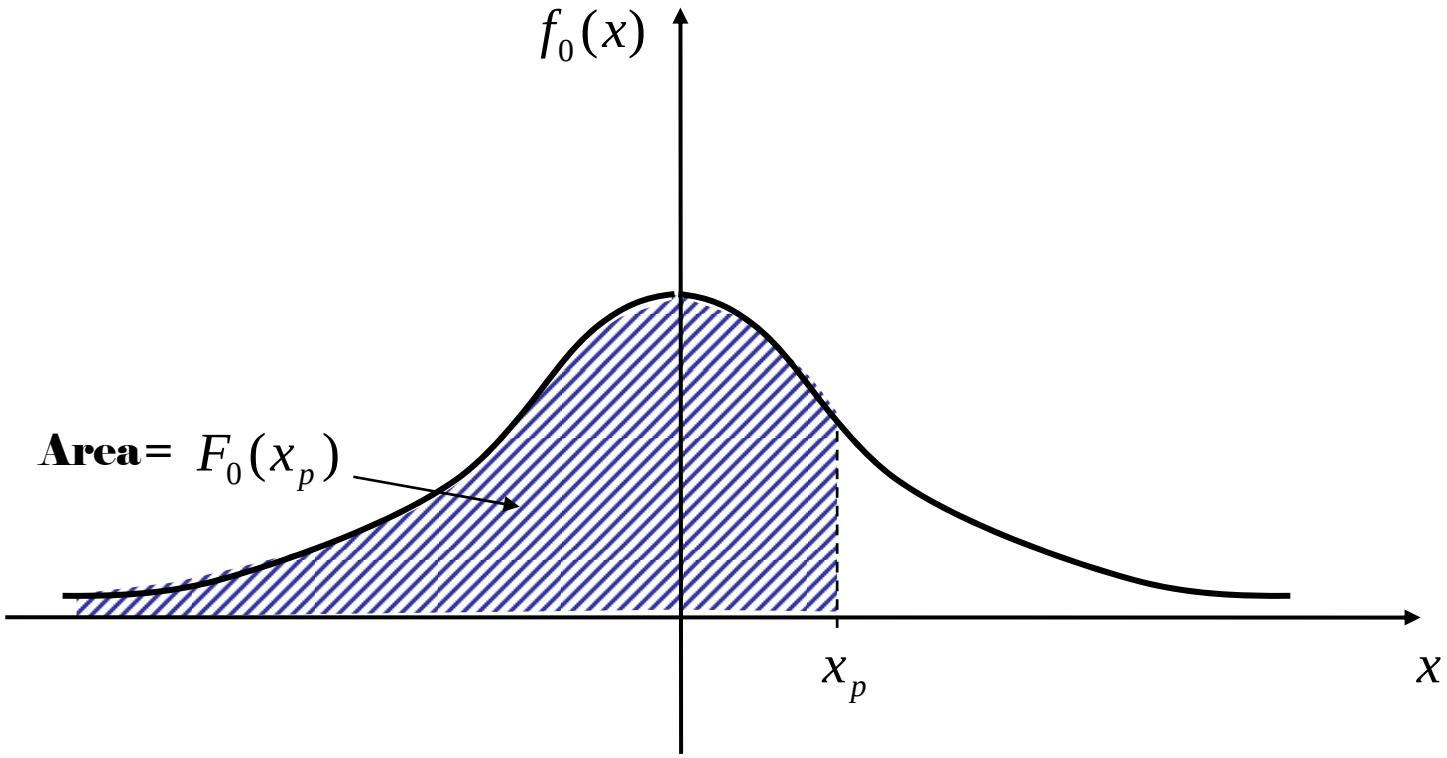

Figure 3.31

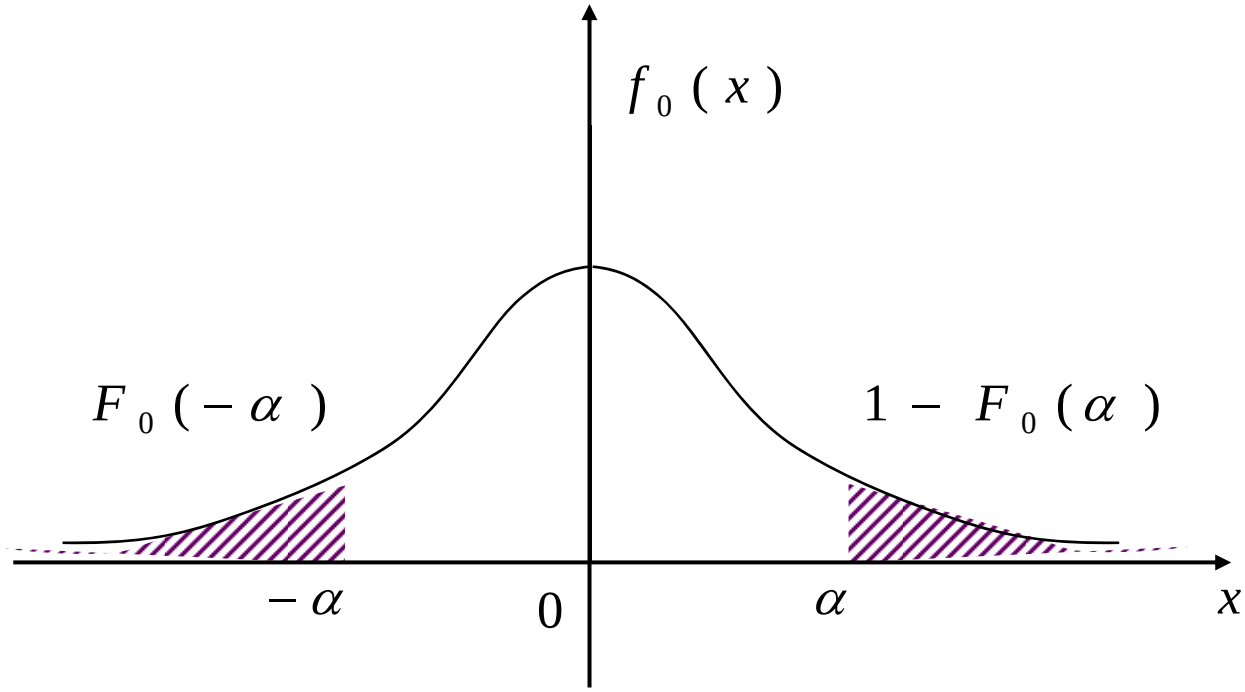

Figure 3.32

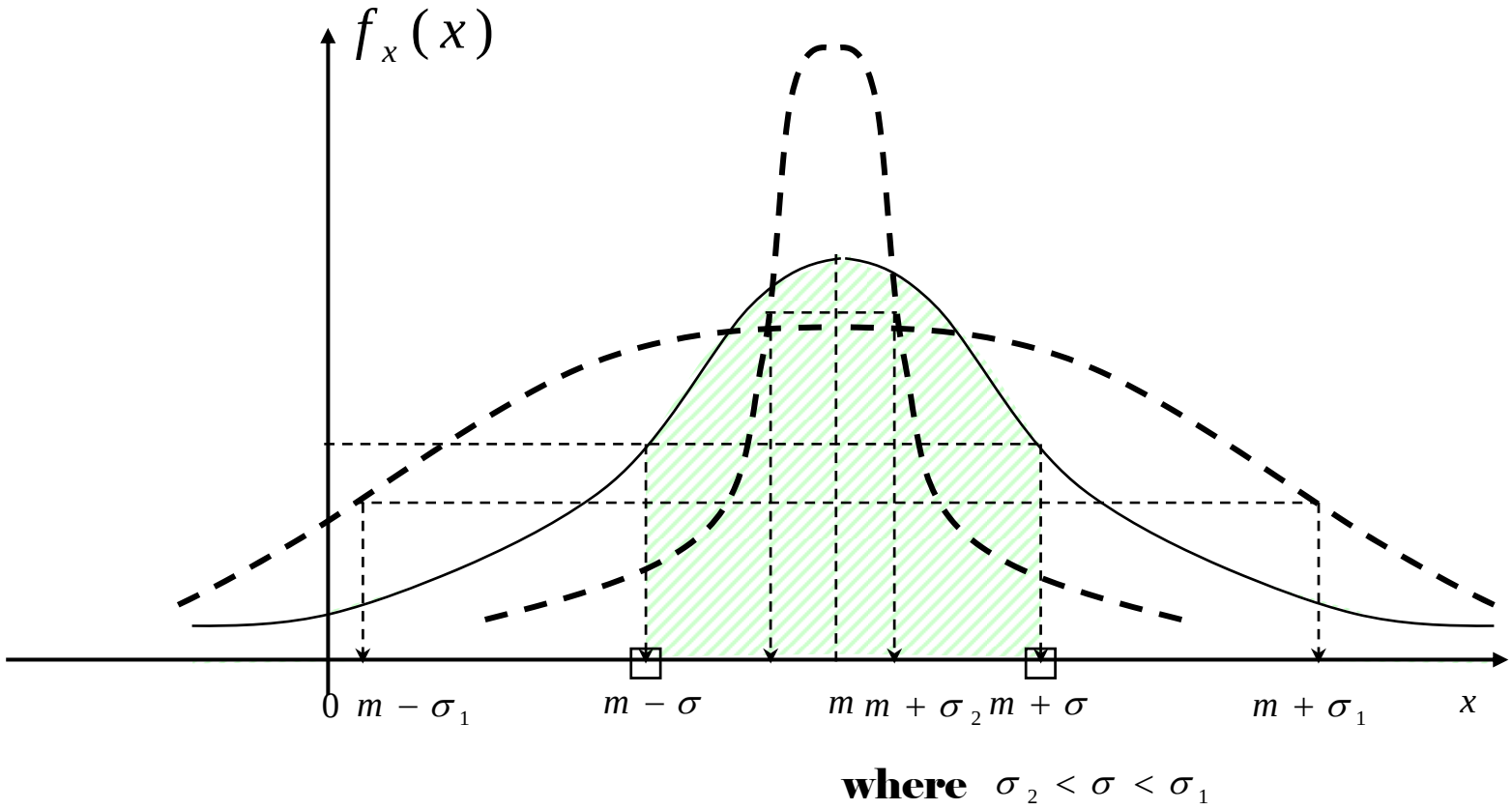
$f_x(x)$
0
$m - \sigma_1$
$m - \sigma$
m
$m + \sigma_2$
$m + \sigma$
$m + \sigma_1$
x
where $\sigma_2 < \sigma < \sigma_1$

Figure 3.33

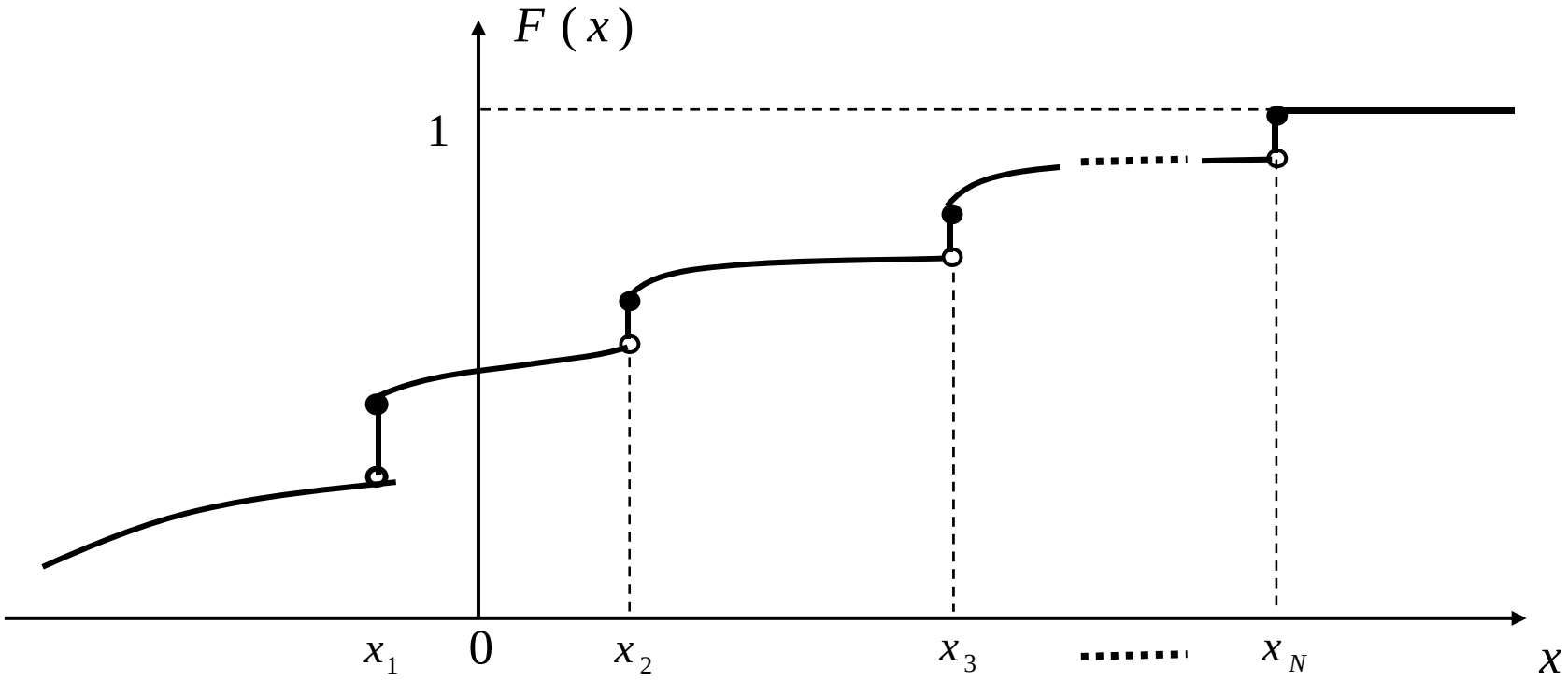

Figure 3.34

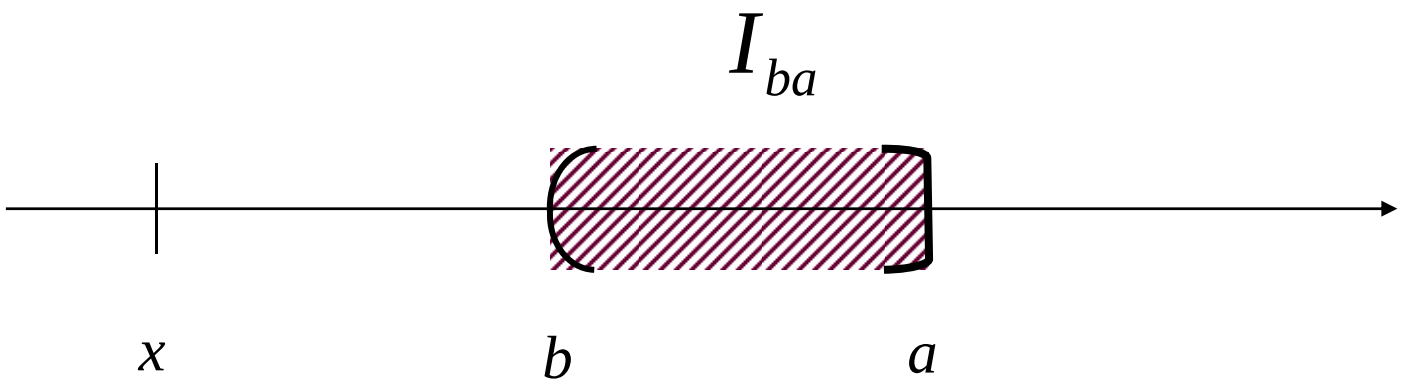

Figure 3.35

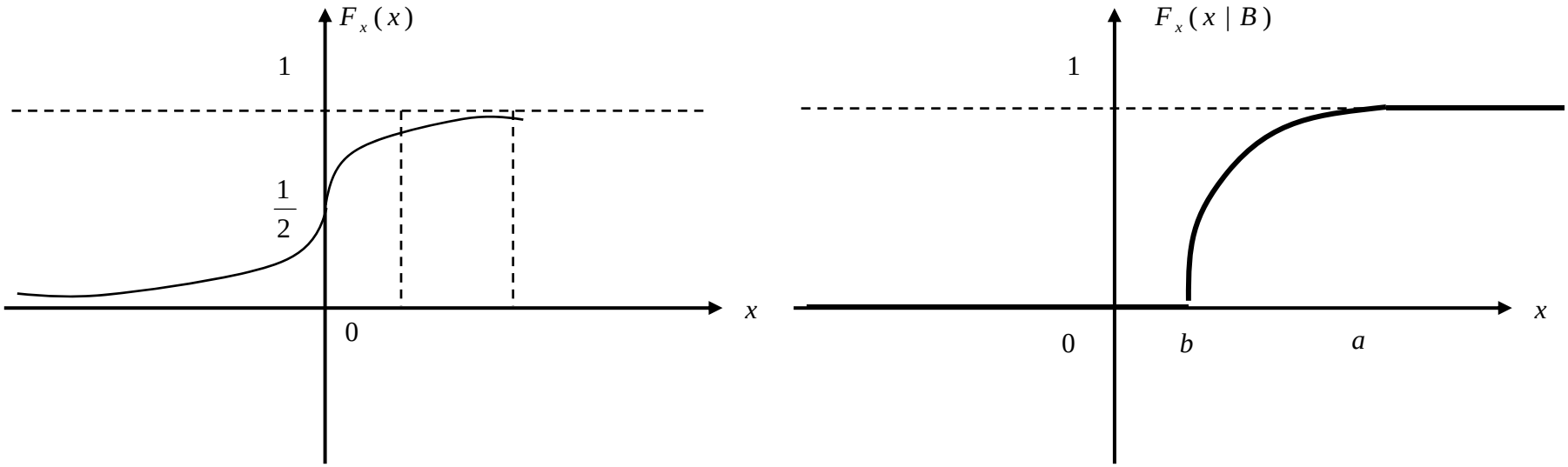

Figure 3.36