type 1 -
incorrectly reject
H_0
prob = α
$\alpha = 0.05$

standard
· normal
· t-dist

pt(#, df)
pnorm( )

t_n

p-value
< α

$-t_\alpha$
-1.67

0

t_α
$t_{1-\alpha}$

1.8

$$.1$$

$$b$$

$$a \qquad u \qquad 1$$

$$P$$
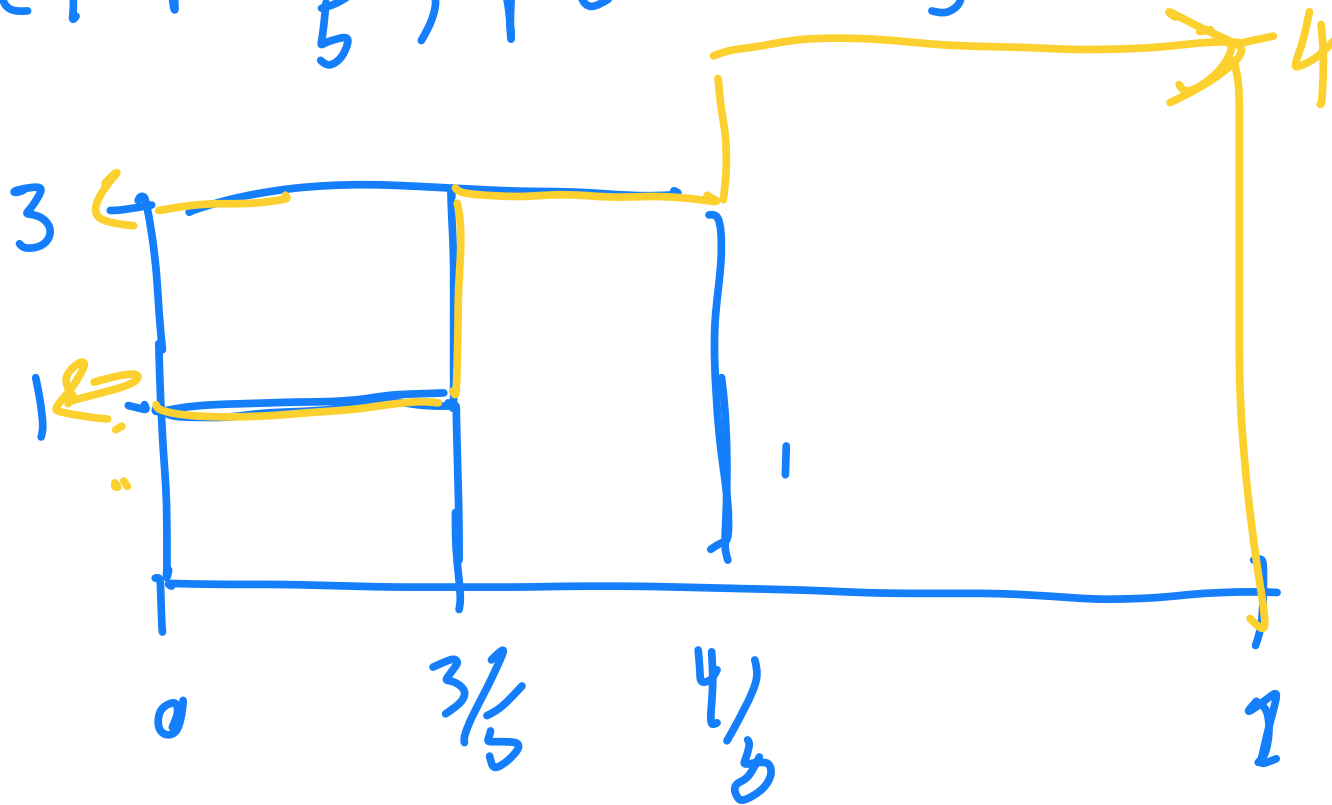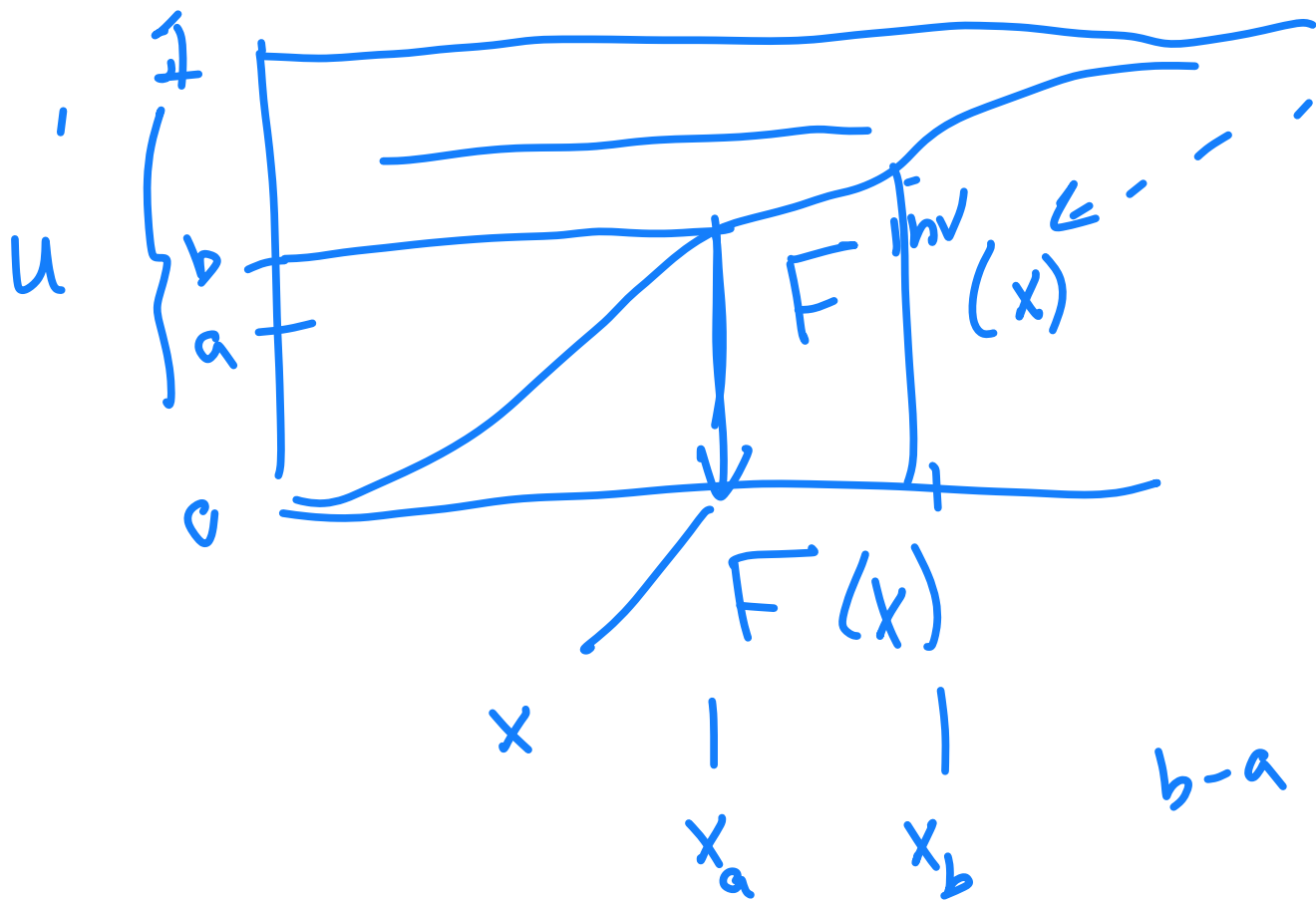
4   RV.

$P(Y=1) = \frac{3}{5}$, $P(Y=3) = \frac{1}{5}$ $P(Y=4) = \frac{1}{5}$

$$y = \begin{cases} 0 \leq u \leq 3/5 & 1 \\ \frac{3}{5} < u \leq 4/5 & 3 \\ \frac{4}{5} < u \leq 1 & 4 \end{cases}$$

Cont RV's in Sim
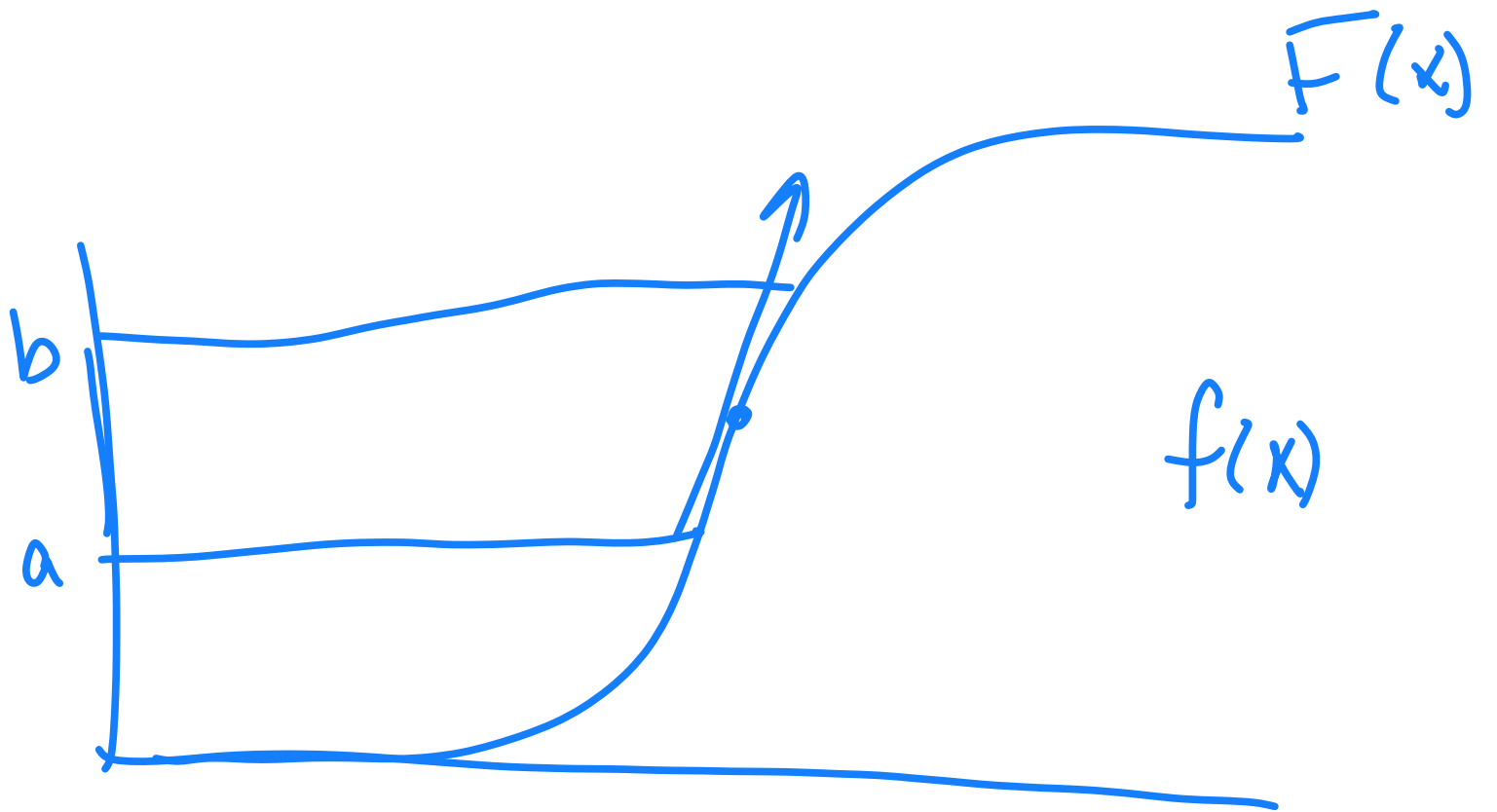

quantile

$F^{inv}(x)$

$f(x)$ - pdf.

$F(x)$

x x_a x_b $b-a$

$F(x)$

b

a

$f(x)$

Generate samples from $Exp(\lambda)$

$$f(x) = \lambda e^{-\lambda x}$$

$$F(x) = 1 - e^{-\lambda x}$$

$$1 - e^{-\lambda x} = u \quad \Rightarrow \quad 1 - u = e^{-\lambda x}$$

$$\ln(1-u) = -\lambda x \qquad x = -\frac{\ln(1-u)}{\lambda} = -\frac{\ln(u)}{\lambda}$$