exo 1 let $X \hookrightarrow \mathcal{N}(0,1)$, compute a) $P(X \leq 2.12)$, b) $P(1.2 \leq X \leq 2.3)$, c) $P(X \geq 1.45)$ d) $P(X \geq -0.7)$, e) $P(X \leq -1.2)$, f) $P(-0.83 \leq X \leq 0.47)$

a) $P(X \leq 2.12) = 0.983$

b) $P(1.2 \leq X \leq 2.3) = P(X \leq 2.3) - P(X \leq 1.2)$
$= 0.98928 - 0.88493$
$= 0.10435$

c) $P(X \geq 1.45) = 1 - P(X \leq 1.45)$ because X continuous
$= 1 - 0.92647$
$= 0.07353$

d) $P(X \leq -1.2)$ given $X \hookrightarrow \mathcal{N}(0,1)$ symmetric and centered $\forall x \in \mathbb{R}\ F_X(x) = 1 - F_X(x)$
$P(X \leq -1.2) = P(X \geq 1.2) = 1 - P(X \leq 1.2)$
$= 1 - 0.88493$
$= 0.11507$

e) $P(X \geq -0.7) = 1 - P(X \leq -0.7) = 1 - P(X \geq 0.7)$
$= 1 - (1 - P\,X \leq 0.7)$
$= P(X \leq 0.7) = 0.75804$

f) $P(-0.83 \leq X \leq 0.47) = P(X \leq 0.47) - P(X \leq -0.83)$
$= 0.68082 - P(X \geq 0.83)$
$= 0.68082 - (1 - P(X \leq 0.83))$
$= 0.68082 - 1 + 0.79673$
$= 0.47755$

exo 2 let $Y \hookrightarrow \mathcal{N}(2, 25)$, compute a) $P(Y \leq 2.4)$, b) $P(Y \leq -1.2)$

a) given $X = \frac{Y - \mu}{\sigma}$ and $X \hookrightarrow \mathcal{N}(0,1)$ $\Rightarrow$ $P(Y \leq 2.4) = P\left(X \leq \frac{2.4 - 2}{5}\right) = P(X \leq 0.08)$
$= 0.53188$

b) $P(Y \leq -1.2) = P\left(X \leq \frac{-1.2 - 2}{5}\right) = P(X \leq -0.64) = P(X \geq 0.64)$
$= 1 - P(X \leq 0.64)$
$= 1 - 0.73891$
$= 0.26109$