

**STATISTICS APPLIED TO BUSINESS
ADMINISTRATION. ACADEMIC YEAR 2020-2021
PRACTICAL EXERCISE 3 (20 MINUTES)**

Date: _____

Complete name: _____ ID number: _____

EXERCISE 1 (4 POINTS)

Let X be a r.v. with characteristic function given by $\Psi_X(u) = (1 - 2iu)^{-3}$.

1. **(2 points)** Providing all relevant details, compute the value of $P(2.20 < X < 14.40)$.
2. **(2 points)** Providing all relevant details, compute the value of a such that $P(1.64 < X < a) = 0.925$.

EXERCISE 2 (6 POINTS)

Let X , Y , Z and V be four independent r.v. such that: $X \in N(0, 4)$, $Y \in N(0, 1)$, $Z \in \gamma(\frac{1}{2}, 3)$ and $V \in \chi_{10}^2$.

1. **(2 points)** Compute the probability that the r.v. $W_1 = \frac{\sqrt{10}X}{2\sqrt{V}}$ takes on values smaller than or equal to 1.81.
2. **(2 points)** If we define the r.v. $W_2 = \frac{10(Z+Y^2)}{7V}$, find the value of k such that $\overline{P}(W_2 \geq k) = 0.95$.
3. **(2 points)** Find the value of k such that $P(W_1 \leq k) = 0.20$.