# STATISTICS APPLIED TO BUSINESS ADMINISTRATION. ACADEMIC YEAR 2024-2025 PRACTICAL EXERCISE 3 (20 MINUTES)

Date: _____

Complete name: _____ ID number: _____

### EXERCISE 1 (4 POINTS)

Let $X$ be a r.v. such that $X \in \gamma(a, r)$, and that its mean and variance are equal to 6 and 12, respectively.

1. **(2 points)** Providing all relevant details, find the distribution of the r.v. $X$.

2. **(2 points)** Providing all relevant details, find the values of $a$ and $b$ such that $P(X < a) = 0.10$ and $P(a < X < b) = 0.85$ hold.

## EXERCISE 2 (6 POINTS)

Let $X$, $Y$ and $Z$ be three independent r.v. such that: $X \in N(0, \sigma^2 = 9)$, $Y \in \gamma(\frac{1}{2}, 4)$ and $Z \in \gamma(\frac{1}{2}, \frac{5}{2})$.

1. **(2 points)** Find the value of $k$ such that $P(X^2 < k) = 0.25$.

2. **(2 points)** Let $V = \dfrac{\sqrt{8}X}{3\sqrt{Y}}$. Compute $P(-0.706 < V < 2.90)$.

3. **(2 points)** Let $W = \dfrac{9Z}{5X^2}$. Compute $P(W < 0.2463)$.