STATISTICS APPLIED TO BUSINESS ADMINISTRATION. ACADEMIC YEAR 2019-2020 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 1 and 1, respectively.

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

2. **(2 points)** Providing all relevant details, compute the value of $P(-2 < X < 2)$.

EXERCISE 2 (6 POINTS)

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

1. **(2 points)** If we define the r.v. $Y_1 = Z + W$, compute $P(Y_1 > 4.25)$.

2. **(2 points)** If we define the r.v. $Y_2 = \frac{7(X+Y)^2}{4Y_1}$, find the value of k such that $P(Y_2 \leq k) = 0.10$.

3. **(2 points)** If we define the r.v. $Y_3 = \frac{\sqrt{2}Y}{\sqrt{Z}}$, find $P(-0.553 < Y_3 < 2.45)$.