

This exam is due on Monday November 27 at 10:45 in class

4. Suppose that X is a continuous Uniform $(0,1)$. Let $Y = 5\left[\frac{1}{(1-X)^2} - 1\right]$ or

$$Y = 5[(1 - X)^{-1/2} - 1]$$

- Determine the support of Y (all y satisfying $f_Y(y) > 0$) and its CDF.
- Determine the pdf, mean and variance of Y after identifying the distribution of Y and its parameters.
- Compute the probability (numerically please) that $Y > 5$ and then
 - Determine the probability that as independent copies of Y are generated on a computer, the first Y generated that exceeds 5 is in fact the 6-th Y .
 - 10 independent Y 's are generated on a computer. What is the probability that exactly 2 exceed 5?