

A couple more facts about Gamma random variables:

Exponential random variables have the memoryless property BUT

Gamma random variables only have the memoryless property if they are actually Exponential random variables, i.e. only if  $r=1$ .

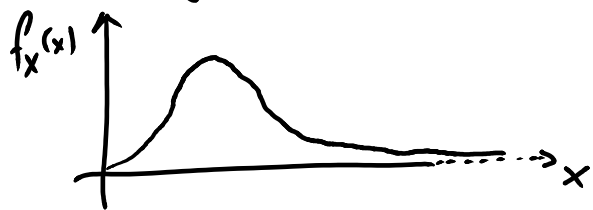
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Similarly the minimum of independent Exponential random variables is also an Exponential random variable.

It is not the case for Gamma random variables (unless, again,  $r=1$  so they are really Exponential random variables)

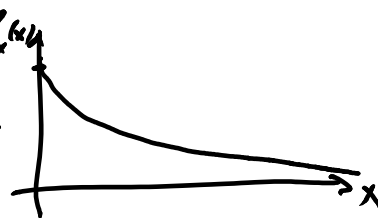
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The density of a Gamma random variable looks like:



if  $r \geq 2$ , or

if  $r=1$ :



Remember: An Exponential random variable is a Gamma random variable with  $r=1$ .