A couple notes: We've seen a pair of random variables X, Y with joint probability density $f_{X,Y}(x,y) = 35e^{-5x-7y}$ for $x>0, y>0$
$= 0$ otherwise

Noticed that it can be factored: $f_{X,Y}(x,y) = (5e^{-5x})(7e^{-7y})$ for $x>0, y>0$

So it is the case that, for all x, all y, $f_{X,Y}(x,y) = f_X(x) f_Y(y)$

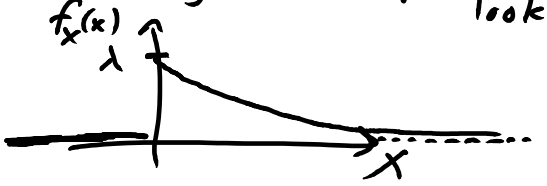
where $f_X(x) = \begin{cases} 5e^{-5x} & x>0 \\ 0 & \text{otherwise} \end{cases}$

$f_Y(y) = \begin{cases} 7e^{-7y} & y>0 \\ 0 & \text{otherwise} \end{cases}$

Since X and Y each have the correct form, it follows that X is exponential with $E(X) = \frac{1}{5}$ and Y is an exponential random variable with $E(Y) = 1/7$.

Another thing: How does the density of an exponential random variable look??

$f_X(x) = \begin{cases} \lambda e^{-\lambda x} & x>0 \\ 0 & \text{otherwise} \end{cases}$



How about the CDF?

$F_X(x) = \begin{cases} 1 - e^{-\lambda x} & x>0 \\ 0 & \text{otherwise} \end{cases}$