Quiz 4

Answer the questions. Be sure to justify your answer do not simply write the answer down. Use complete sentences where appropriate and scrap paper if needed (on the desk at the front of class, scrap paper must be turned in but will not be graded for work). Circle or box your answer where appropriate. You may ask questions about the wording of a question or to clarify the instructions.

1. Suppose X and Y are independent discrete random variables with marginal p.m.f.'s $f_1(x)$ and $f_2(y)$, respectively. If $f_1(3) = .4$ and $f_2(6) = .3$, then what is $f(3,6)$?   (5 pts.)

2. Let the joint p.m.f. of X and Y be $f(x,y) = 1/4$ for $(x,y) \in S = \{(0,0),(1,1),(1,-1),(2,0)\}$. Calculate $\text{Cov}(X,Y)$ and the correlation coefficient ρ. Are X and Y independent?   (10 pts.)

3. Let X and Y be continuous random variables having the joint p.d.f.

$$f(x, y) = x + y, \quad 0 < x < 1, \ 0 < y < 1.$$

Find the marginal p.d.f.'s of X and Y. $\hspace{2cm}$ (5 pts.)