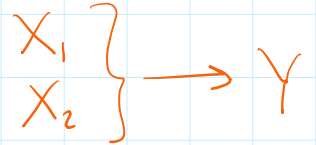


BIVARIATE TRANSFORMATIONS

Random variables X_1 and X_2 have joint density $f(x_1, x_2)$ and $Y = g(X_1, X_2)$. What is the density of Y ?

cdf method:



- Identify the possible values of Y .
- For a fixed value y , sketch $Y=y$ in the x_1x_2 -plane.
- Find the region R in the x_1x_2 -plane where $Y \leq y$.
- Find the cdf $F_Y(y)$ by integrating $f(x_1, x_2)$ over R .
- Differentiate F_Y to obtain the density $f_Y(y)$. *goal*

cdf of Y : $F_Y(y) = P(Y \leq y)$