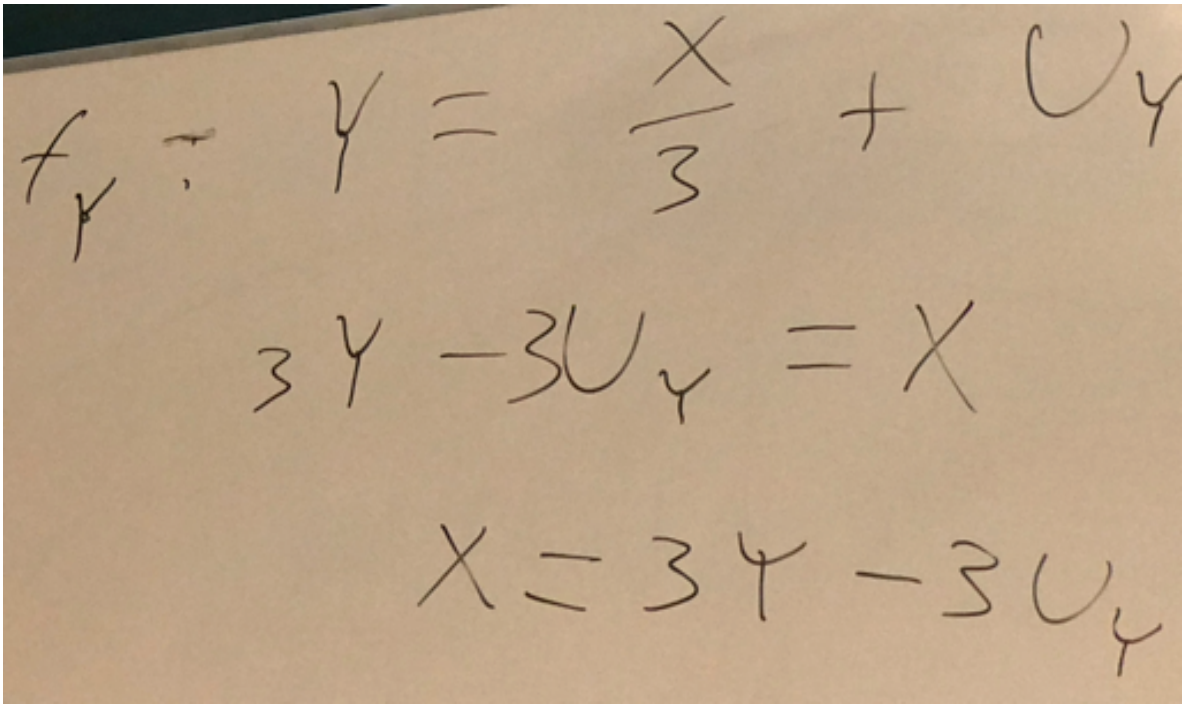
L2 Graph theory

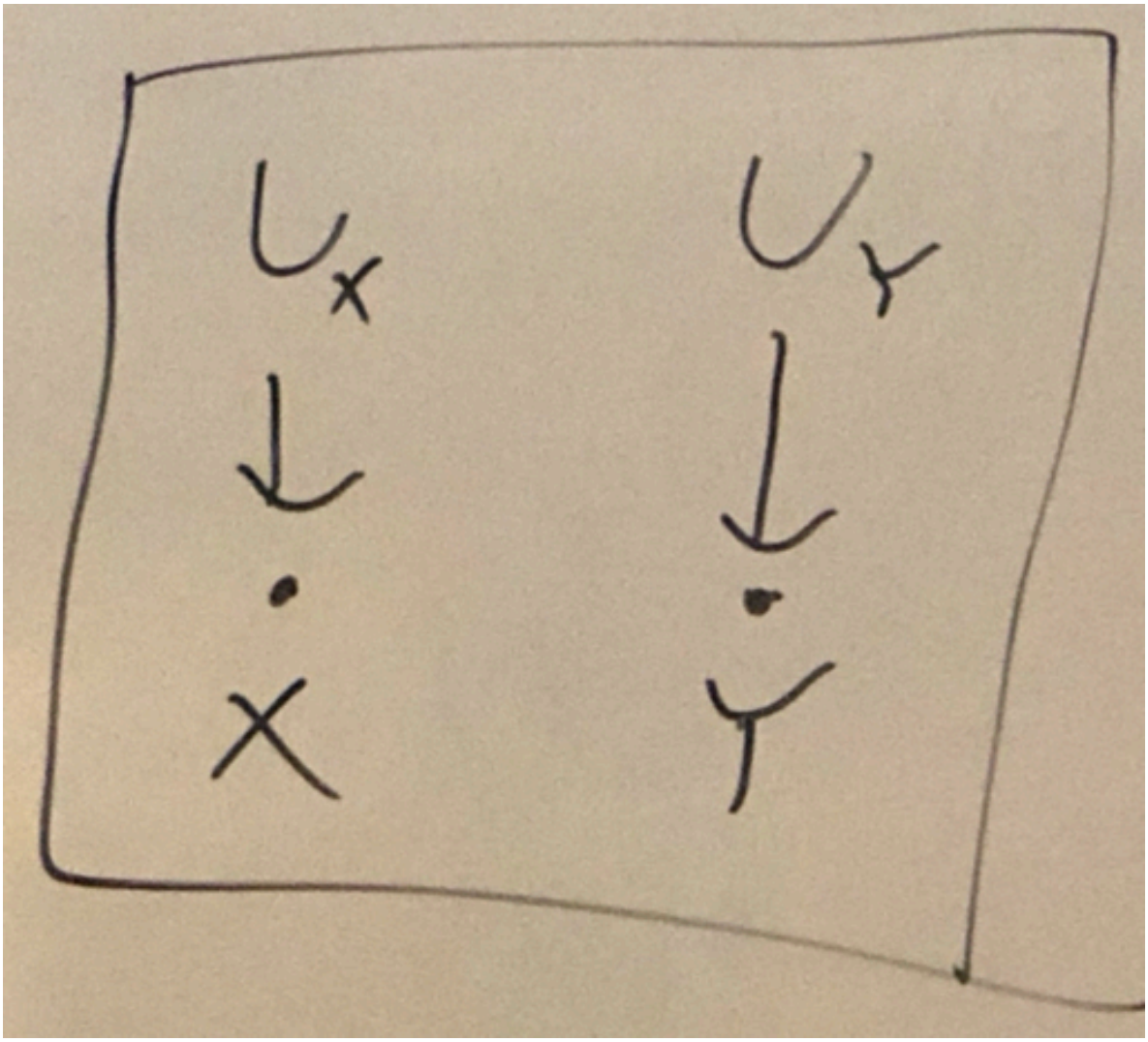
3/27

Rewriting an equation example:

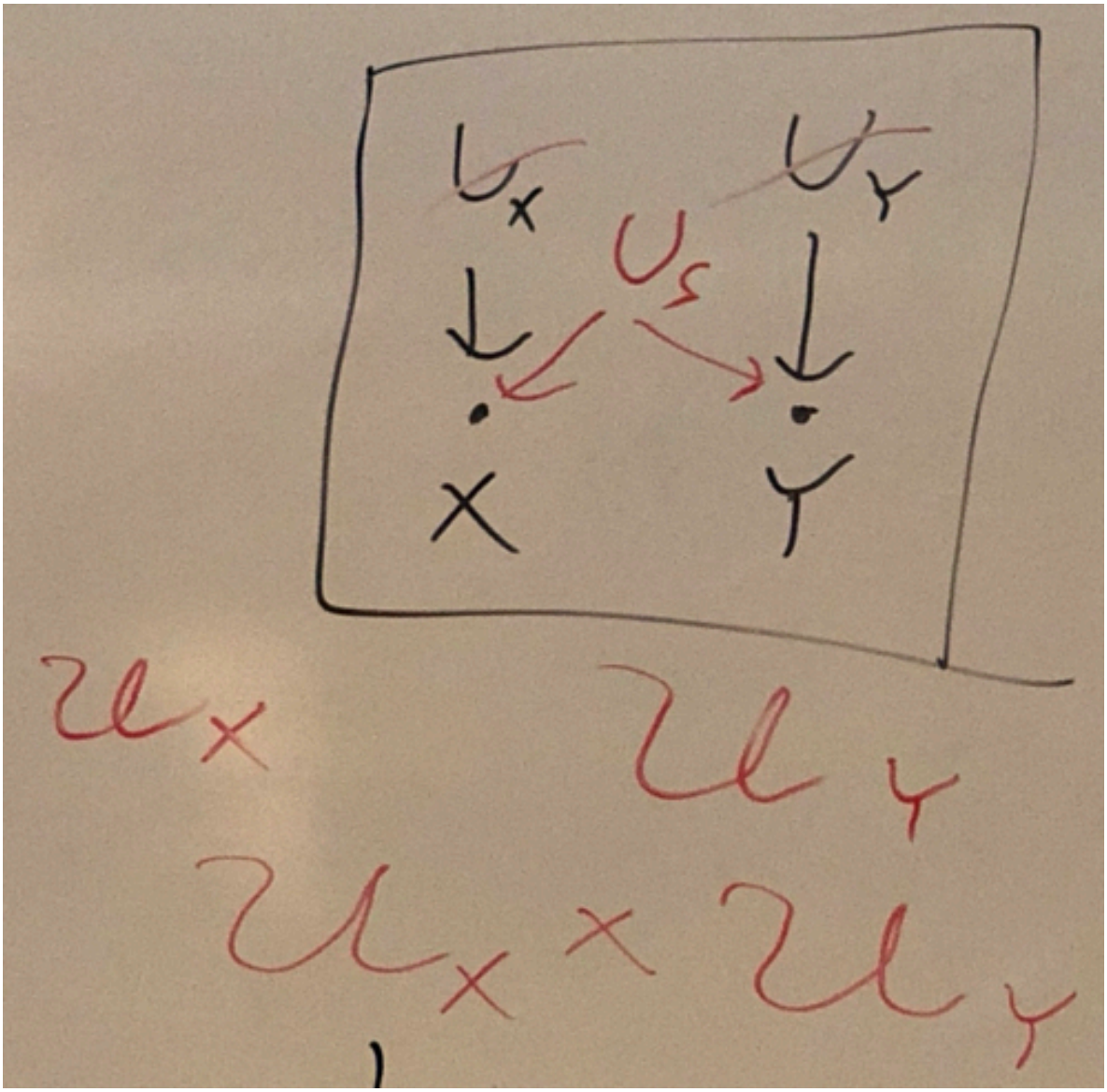


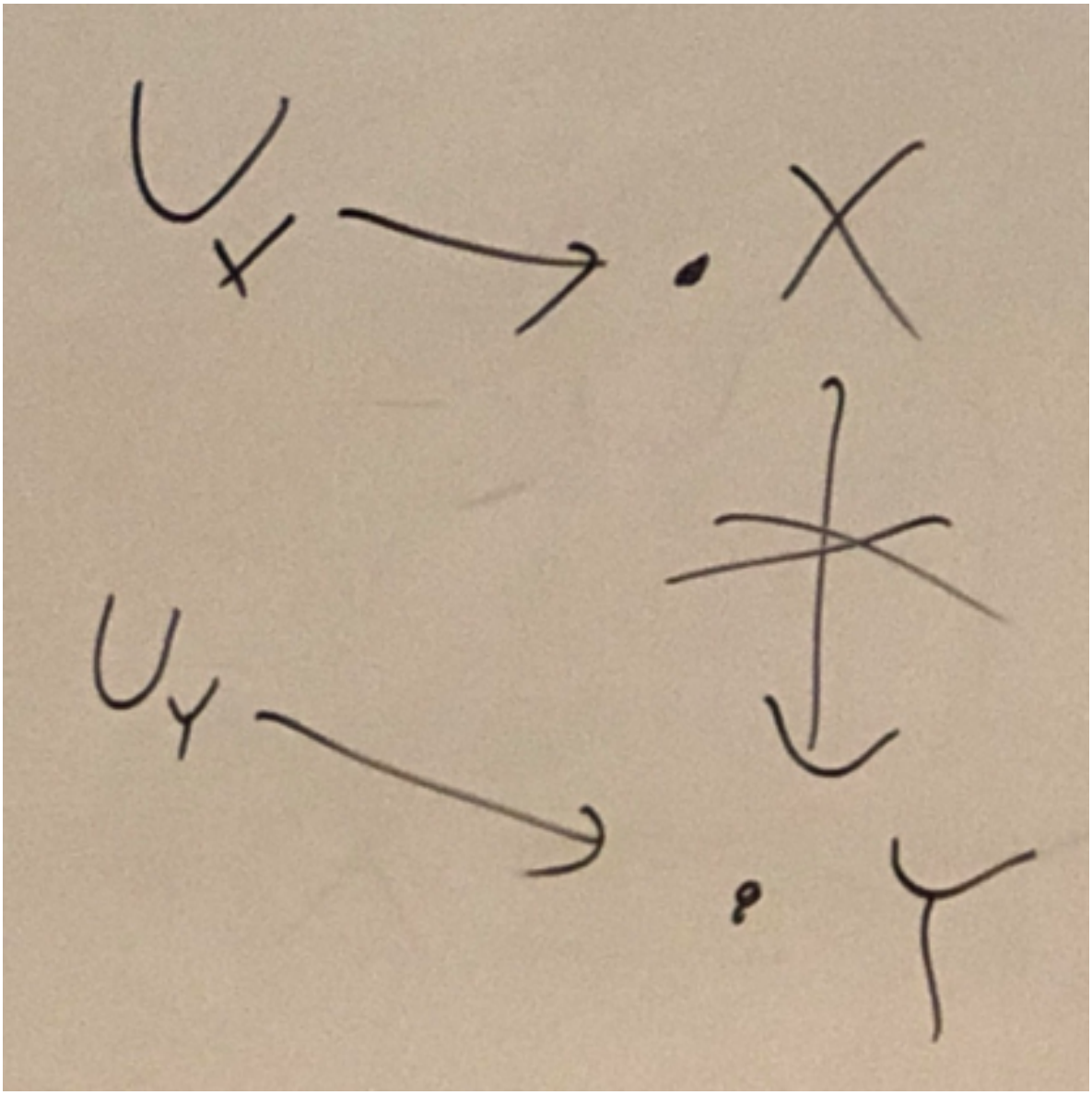
9/27

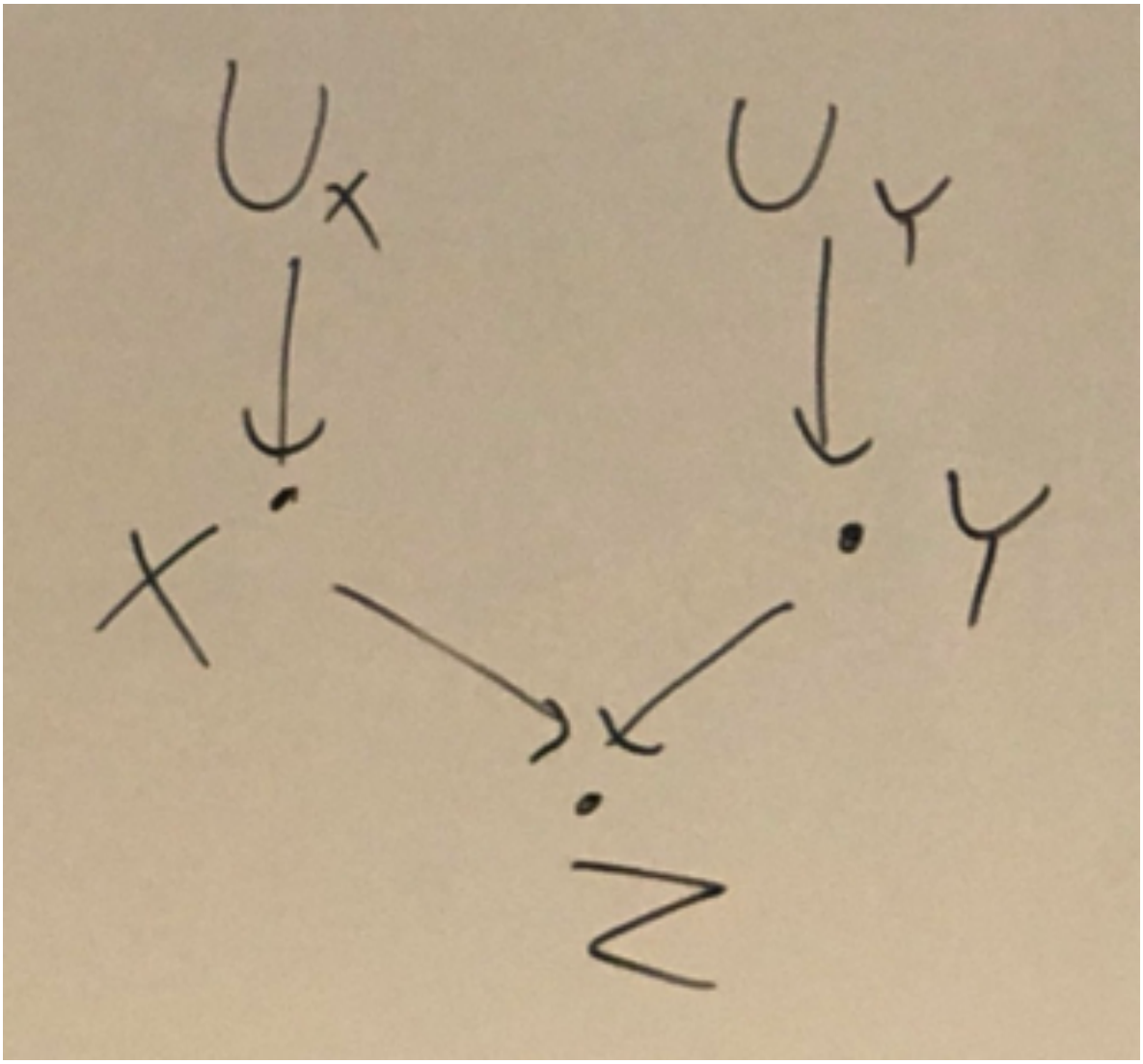
Independent variables



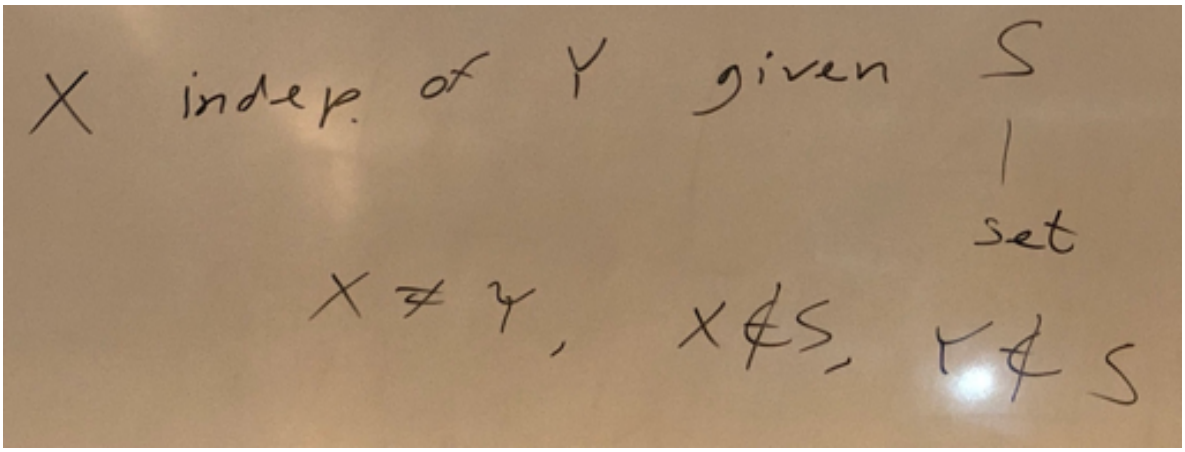
Added exogenous variable:



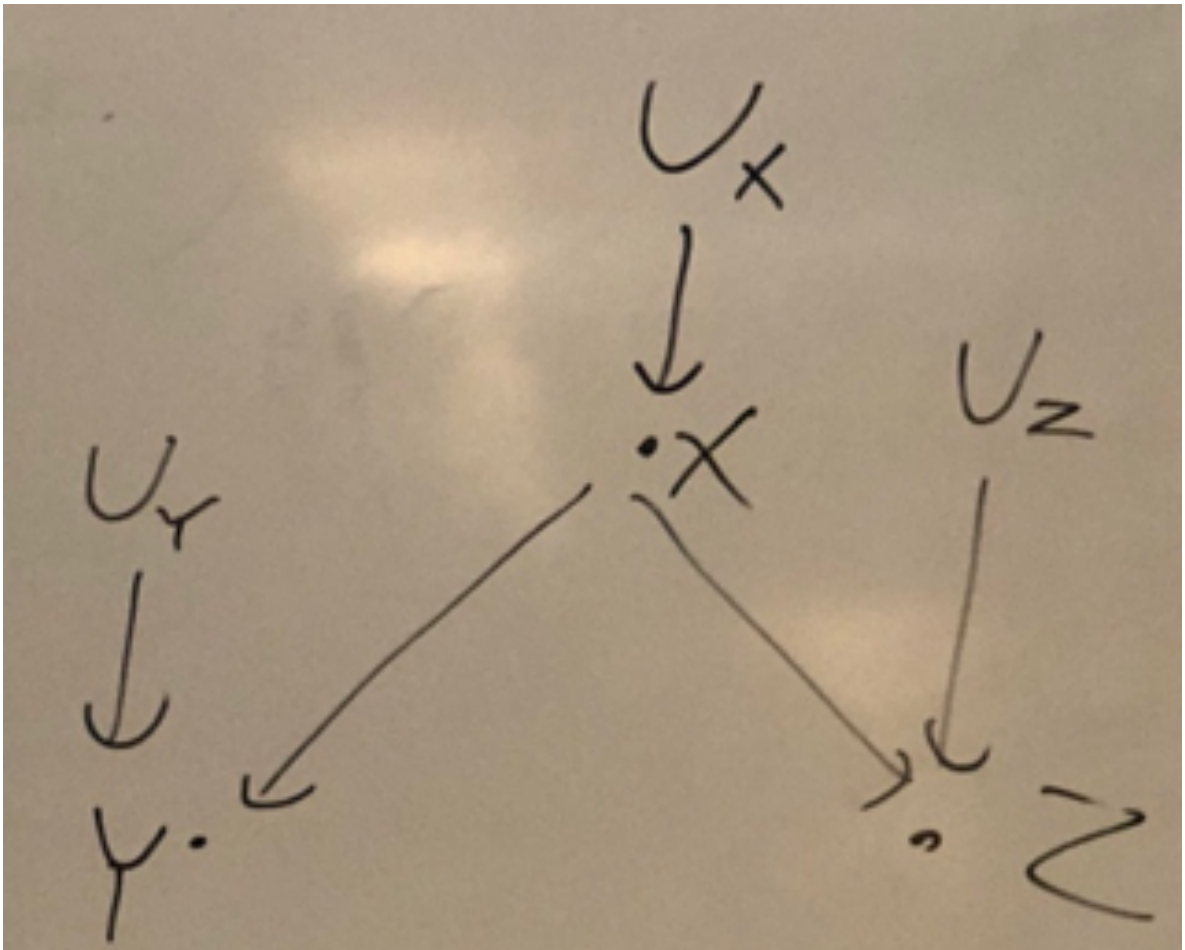




19/27
Rules where the conditional independence follows



22/27
Y and Z are independent given X

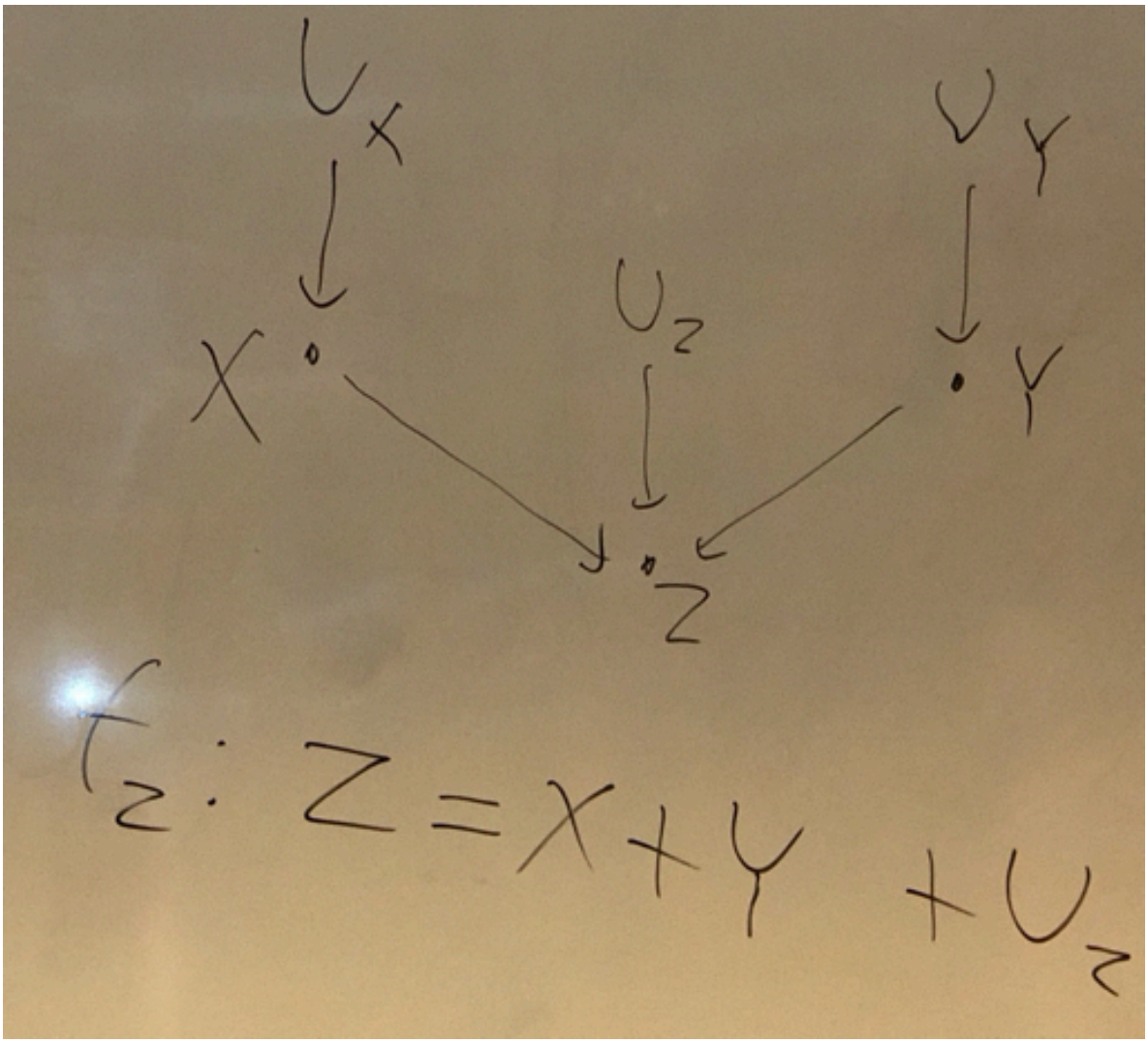


$$\dot{Y} = \dot{X} + u_y$$

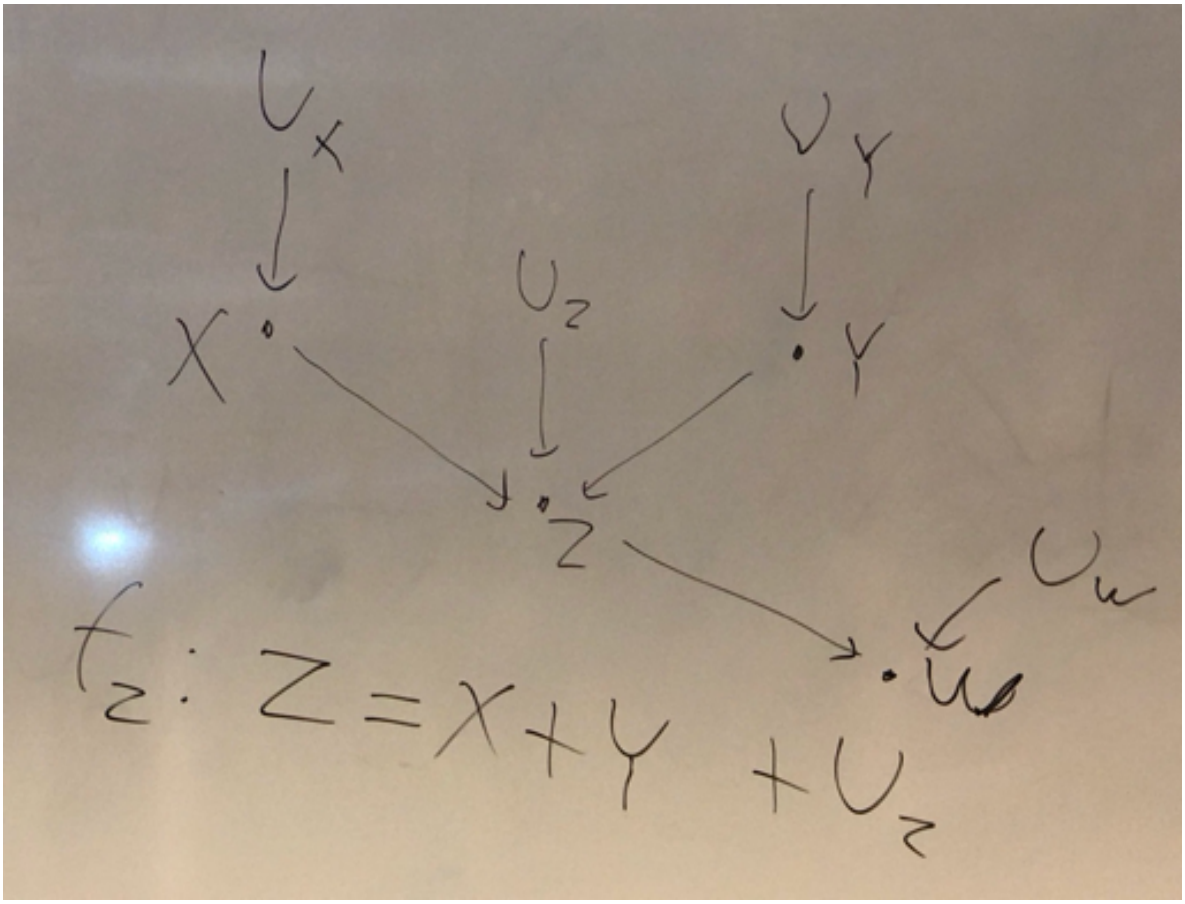
$$\dot{Z} = \dot{X} + u_z$$

25/27

X and Y are likely dependent when we condition on Z. So value of X starts telling us something about value of Y.



X and Y are still dependent if we introduce a new variable W


U_X
U_Y
U_Z
X
Y
Z
U_W
W
$f_Z: Z = X + Y + U_Z$