

## Homework 5

1. Assume that  $(X, Y)$  has the following joint probability distribution.

$Y \backslash X$	$-1$	$3$
	$0.08$	$a$
$-1$		
$1$	$0.12$	$0.18$
$2$	$0.20$	$0.30$

- (1) Find the value of  $a$
- (2) Find the marginal probability distributions of  $X$  and  $Y$
- (3) Calculate  $E(X)$  and  $E(Y)$
- (4) Find probability distributions of  $Z = X + Y$  and  $Z = XY$
- (5) Calculate  $E(X + Y)$  and  $E(XY)$
- (6) Are  $X$  and  $Y$  independent?