Nodes = random variables
Edges = direct dependence

Convergent path

$P(r=1) = 0.10$ $P(r=0) = 0.90$
$P(s=1) = 0.20$ $P(s=0) = 0.80$

① $P(w=1 \mid r=0, s=0) = 0.001$
② $P(w=1 \mid r=0, s=1) = 0.97$
③ $P(w=1 \mid r=1, s=0) = 0.90$
④ $P(w=1 \mid r=1, s=1) = 0.99$

A: $r=1$ 0.10
B: $s=1$ 0.70
C: $w=1$
D: $r=0$ 0.90
E: $s=0$ 0.80

① $P(r, s, w) = P(w \mid r, s) P(r) P(s)$
$= (0.99)(.1)(.2) = 0.0198$

② ①
$P(r, s, w) = P(w \mid r, s) P(r) P(s)$
$= (0.001)(0.90)(0.80) = 0.00072$

②
$P(r, s, w) = P(w \mid r, s) P(r) P(s)$
$= (0.97)(0.90)(0.20) = 0.1746$

③
$P(r, s, w) = P(w \mid r, s) P(r) P(s)$
$= (0.90)(0.10)(0.80) = 0.072$

④
$P(r, s, w) = P(w \mid r, s) P(r) P(s)$
$= (0.99)(0.1)(0.2) = 0.0198$

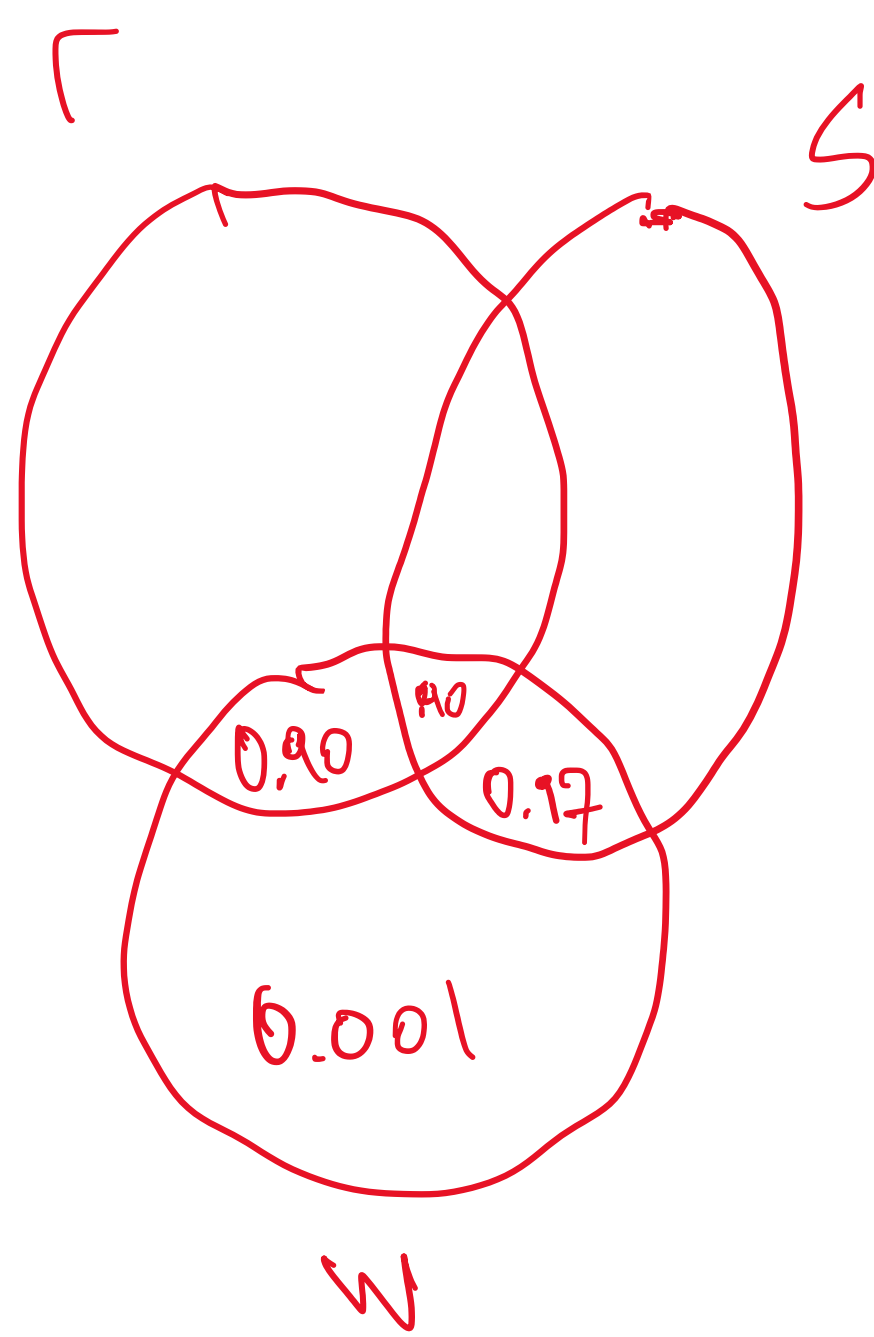$P(w=1) = 0.00072 + 0.1746 + 0.072 + 0.0198$
$= 0.26712 \; ☆ = W$

③
$P(w \mid r, s) P(r) P(s)$
$(0.26712)(0.1)(0.80) = 0.0213696$

$.26712 (.80) = .213696$

$.26712 (.90) = .240408$

$\dfrac{.26712}{.80} = .3339$

$\dfrac{.26712}{.9} = .2968$

Sprinkler off:

$P \left(\dfrac{0.26712}{(.80 * 2)} \right) = 0.16695$

Who Rain:

$P \left(0.26712 * (0.1 * 2) \right) = 0.053$