## Q5. PMI vs PPMI

Given:

- P(word, context)=0.015
- P(word)=0.1
- P(context)=0.2

**Tasks**:

- (a) Compute PMI

  $\text{PMI} = \log_2 [ \text{P(word, context)} / (\text{P(word)} \times \text{P(context)}) ]$

  $= \log_2 [ 0.015 / (0.1 \times 0.2) ]$

  $= \log_2 [ 0.015 / 0.02 ]$

  $= \log_2 (0.75)$

  $-0.415$

  **PMI = −0.415**


- (b) Compute PPMI by thresholding negatives at 0

  $\text{PPMI} = \max(\text{PMI}, 0)$

  $= \max(-0.415, 0)$

  $= 0$

  **PPMI = 0**